DOCUMENT RESUME

ED 305 867 HE 022 405

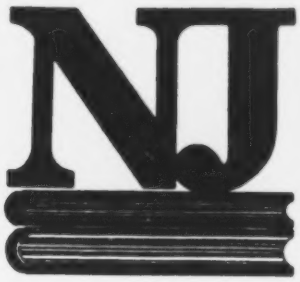
TITLE	Report to the New Jersey Board of Higher Education on the Results of the New Jersey College Basic Skills Placement Testing. Fall 1988 Entering Freshmen.
INSTITUTION	New Jersey State Dept. of Higher Education, Trenton. New Jersey Basic Skills Council.
PUB DATE	17 Feb 89
NOTE	102p.
AVAILABLE FROM	Basic Skills Assessment Program, New Jersey Department of Higher Education, 20 West State Street, CN 542, Trenton, NJ 08625.
PUB TYPE	Statistical Data (110) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Basic Skills; College Bound Students; *College Freshmen; Communication Skills; Higher Education; High School Graduates; Mathematics Skills; *Minimum Competency Testing; *Outcomes of Education; Performance; Public Colleges; State Surveys; Student Evaluation; Verbal Ability
IDENTIFIERS	*New Jersey Basic Skills Placement Test

ABSTRACT

The 11th annual report from the New Jersey Basic Skills Council provides information on the level of basic skills (verbal, computation, and elementary algebra) among freshmen admitted to New Jersey's public colleges and universities. Proficiency levels are estimated from performance on the New Jersey College Basic Skills Placement Test (NJCBSPT). Results are presented by: statewide findings (upward trend in elementary algebra); college sectors; recent high school graduates (11-year trends, results by high school program, and high school mathematics and college proficiency); 1988 high school graduates and homework (amount of homework, homework and proficiency, and comparison of NJCBSPT data with National Assessment of Educational Progress findings); non-recent high school graduates; and demographic information. The methods of disseminating study results are discussed, and outcomes of skills-deficient students in college are noted. The percentages of underprepared students entering institutions of higher education continue to be large, and test results and demographic characteristics of the students stable. There have been slight upward trends statewide in elementary algebra, and in verbal skills and communication at the more selective institutions. Appended are a description of the NJCBSPT, a list of participating independent colleges/universities, an explanation of NJCBSPT year to year score equating, NJCBSPT mean scaled scores 1978-1988, and a description of the proficiency levels established by the Basic Skills Council. (SM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED305867



New Jersey College Basic Skills Placement Testing

Fall 1988

New Jersey Basic Skills Council

Department of Higher Education

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

New Jersey Department

of Higher Education

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

HE 022 405

MEMBERS

STATE BOARD OF HIGHER EDUCATION

Deborah P. Wolfe
Chairperson

Albert W. Merck
Vice-Chair

William O. Baker

Martin S. Barber

Michael Bongiovanni

Sister Jacqueline Burns

Julius L. Chambers

Anne Dillman

T. Edward Hollander
Chancellor of
Higher Education
Ex Officio

Marion Epstein

Rabbi Martin Freedman

Thomas H. Gassert

Milton H. Gelzer

Donald A. Peterson

Michael Traino

Saul Cooperman
Commissioner of
Education
Ex Officio

Report to the Board of Higher Education on the Results of the New Jersey College Basic Skills Placement Testing

Fall 1988 Entering Freshmen

NEW JERSEY BASIC SKILLS COUNCIL

February 17, 1989

Robert Lynch, Chair
New Jersey Institute
of Technology

Kwaku Armah
Department of Higher
Education

Madan Capoor
Middlesex County College

Walter Cmielewski
Mt. Olive High School

William Daly
Richard Stockton
State College

Delbert Earisman
Upsala College

Herbert Green
Plainfield, NJ

Lewis Hirsch
Rutgers University
New Brunswick

Robert Jeffers
Rutgers University
New Brunswick

Anthony D. Lutkus, Director
Basic Skills Assessment
Program, Department of
Higher Education

Susan Mulligan
Essex County College

Richard Nurse
Rutgers University
New Brunswick

Albert Porter
Mercer County Community
College

Sybil Smith
Montclair State College

Nina Jemmott
Ex Officio
College Outcomes Evaluation
Council Representative
New Jersey Institute
of Technology

Program Officers

Thomas R. Collins
Faye A. Frieson
Dennis P. Levy

1988–89 Faculty Fellow

Frank A. Cerreto
Richard Stockton State College

Secretarial Assistants

Sherri Johnson
Lucille Smith

ASSESSMENT ADVISORY COMMITTEE

Madan Capoor, Chair
Middlesex County College

Patricia Biddar
Union County College

Gregory Camilli
Rutgers University
New Brunswick

Robert Cirasa
Kean College of New Jersey

Walter Cmielewski
Mt. Olive High School

Anthony J. Evangelisto
Trenton State College

Mildred E. Francis
Department of Higher
Education

Anthony D. Lutkus
Department of Higher
Education

Deborah Horan-Morales
Jersey City State College

Susan Mulligan
Essex County College

Gerrald Sircus
Bergen County Commnity
College

Claudette Smith
Department of Higher
Education

Sybil Smith
Montclair State College

READING AND WRITING ADVISORY COMMITTEE

Robert Lynch, Chair
New Jersey Institute
of Technology

Mary Ellen Byrne
Ocean County College

Dennis Donahue
New Jersey Institute
of Technology

Delbert Earisman
Upsala College

Pamela Farrell
Red Bank Regional
High School

Carole Gavin
Burlington County College

Charlee Harris
North Plainfield
High School

William Jones
Rutgers University
Newark

Deborah Kowalski
Hillsborough High School

Anthony D. Lutkus
Department of Higher
Education

Dorothy Minkoff
Trenton State College

RoseAnn Morgan
Middlesex County College

Marianne Reynolds
Mercer County Community
College

Kurt Spellmeyer
Rutgers University
New Brunswick

MATHEMATICS ADVISORY COMMITTEE

Lewis Hirsch, Chair
Rutgers University
New Brunswick

David Boliver
Trenton State College

Joanna Burris
Burlington County College

Elizabeth Collins
Glassboro State College

Angel Eguaras Jr.
Atlantic Community College

Maria Gushanas
Seton Hall University

Helen Kuruc
Essex County College

Paul Lawrence
Franklin Township Public Schools

Virginia Lee
Brookdale Community College

Anthony D. Lutkus
Department of Higher Education

Ruth D. O'Dell
County College of Morris

Robert Urbanski
Middlesex County College

Gabriella Wepner
Ramapo College of New Jersey

TABLE OF CONTENTS

Contents	Page
EXECUTIVE SUMMARY	i
INTRODUCTION	1
Nature of the Test	2
Placement	4
Reporting Format	4
RESULTS	5
Statewide Findings	5
Upward Trend in Elementary Algebra	6
College Sectors	6
Recent High School Graduates	7
Eleven-Year Trends	8
Results by High School Program	9
High School Mathematics and College Proficiency	9
1988 High School Graduates and Homework	10
Amount of Homework	11
Homework and Proficiency	11
Comparison of NJCBSPT Data with NAEP Findings	12
Non-Recent High School Graduates	13
Demographic Information	14
DISSEMINATION OF RESULTS	15
To Colleges	15
To Students	15
To High Schools	15
To the Board of Higher Education and the Higher Education Community	15
OUTCOMES OF SKILLS-DEFICIENT STUDENTS IN COLLEGE	16
CONCLUDING COMMENTS	17

Contents **Page**

LIST OF FIGURES

Figure 1 Levels of Student Proficiency by Sector: Verbal, Fall 1988 19

Figure 2 Levels of Student Proficiency by Sector: Computation, Fall 1988 20

Figure 3 Levels of Student Proficiency by Sector: Elementary Algebra, Fall, 1988 21

Figure 4 Levels of Student Proficiency by Skill Area for Recent High School Graduates, Fall 1988 22

Figure 5 Hours of Homework By Skill Area 23

Figure 6 Hours of Mathematics Homework by Sector 24

Figure 7 Verbal Proficiency by Hours of Reading Homework 25

Figure 8 Verbal Proficiency by Hours of Writing Homework 26

Figure 9 Computation Proficiency by Hours of Mathematics Homework 27

Figure 10 Elementary Algebra Proficiency by Hours of Mathematics Homework 28

LIST OF TABLES

Table 1 Comparison of Statewide Test Results, 1978-1988 29

Table 2 Comparison of Sector Test Results, County Colleges 1978-1988 30

Table 3 Comparison of Sector Test Results, State Colleges 1978-1988 31

Table 4 Comparison of Sector Test Results, Rutgers 1978-1988 32

Table 5 Comparison of Sector Test Results, NJIT 1978-1988 33

Table 6 Comparison of Statewide Test Results for Recent High School Graduates 1978-1988 34

Table 6A 1988 NJ High School Graduates Verbal Proficiency Categories by High School Program Type 35

Contents **Page**

Table 7 Relationship Between Mathematics Courses Completed in High School and the Computation Proficiency of the Students Tested, 1987 vs. 1988, New Jersey High School Graduates Only..... 36

Table 8 Relationship Between Mathematics Courses Completed in in High School and the Elementary Algebra Proficiency of the Students Tested, 1987 vs. 1988, New Jersey High School Graduates Only..... 37

Table 9 Test Results of 1988 Non-Recent High School Graduates..... 38

Table 10 Students Tested, Fall 1988, by Gender Within Sector..... 39

Table 11 Students Tested, Fall 1988, by Enrollment Status Within Sector..... 40

Table 12 Students Tested, Fall 1988, by Year of High School Graduation..... 41

Table 13 Students Tested, Fall 1988, by High School Program..... 42

Table 14 Mathematics Courses Taken in High School, Fall 1988..... 43

Table 15 & 15A
Comparison of Background Data of Students Tested Statewide, 1978-1988..... 44, 45

LIST OF APPENDICES

Appendix A
Description of the New Jersey College Basic Skills Placement Test..... 46

Appendix B
Participating Independent Colleges/Universities..... 49

Appendix C
NJCBSPT Year to Year Score Equating..... 50

Appendix D
NJCBSPT Mean Scaled Scores, 1978-1988
Statewide..... 53
County Colleges..... 54
State Colleges..... 55
Rutgers..... 56
NJIT..... 57
Recent High School Graduates..... 58

Contents **Page**

Appendix E
A Description of the Proficiency Levels Established by the Basic Skills Council..... 59

EXECUTIVE SUMMARY

This report depicts for the New Jersey Board of Higher Education the level of basic skills (verbal skills, computation, and elementary algebra) among freshmen admitted to New Jersey's public colleges and universities. Levels of proficiency are estimated from performance on the New Jersey College Basic Skills Placement Test (NJCBSPT). Designed both to assist colleges in placing already admitted students into remedial or first college-level English and mathematics courses and to provide data for this summary report, the NJCBSPT has now been administered in revised and equated forms for each of the last eleven years.

The statewide proficiency categories reported here reflect the performance of students tested at the campuses of all public institutions of higher education and eleven independent colleges. The results are also separated by public college sectors: county college, state college, Rutgers, and NJIT. This year's report presents an eleven-year retrospective analysis and notes small improvements in student proficiencies.

The results represent *all* students tested at the colleges: full- and part-time; regular, special, and EOF admits combined. From March through October of 1988, students tested totaled 48,358. This total represents a 9% increase over the number of students tested by the same time in 1987. Of the total, 30,883 (64%) were recent (1988) high school graduates.

Students are tested in reading, sentence skills, essay, computation and elementary algebra. Proficiency in verbal skills is measured by a "Total English" composite score derived from the Reading Comprehension, Sentence Sense and Essay subscores. The students entering in the fall of 1988 were judged to have the following levels of proficiency in basic skills according to the standards of college readiness set by the Basic Skills Council:

In verbal skills:

26% appeared proficient,
41% appeared proficient in some areas, and
33% lacked proficiency.

In computation:

30% appeared proficient,
23% appeared proficient in some areas, and
47% lacked proficiency.

In elementary algebra:

15% appeared proficient,
26% appeared proficient in some areas, and
59% lacked proficiency.

The proportions of students in each proficiency category essentially mirror those of recent years and indicate that the basic skills preparedness of the entering freshmen across the higher education system as a whole is below what most faculty expect.

Upward Trend in Elementary Algebra

An eleven-year longitudinal perspective on the data revealed a small improvement statewide in the proportion of students who "Appear Proficient" in elementary algebra. This group has slowly increased from nine to 11% in the early years of the testing to 15% today.

Results by College Sector

The proficiency results from the NJCBSPT correlate with the admissions selectivity of the respective college sectors. The highest percentages of proficient students are found at Rutgers and NJIT. The state college proficiencies are somewhat lower, and the open admission county community colleges enroll, on the average, the least proficient students. It should be noted, however, that all sectors enroll underprepared students. The percentage of students in each proficiency category for each public college sector follows.

	APPEAR PROFICIENT	APPEAR PROFICIENT IN SOME AREAS	LACK PROFICIENCY
	%	%	%
COUNTY COLLEGES			
Verbal Skills	16	41	44
Computation	17	22	61
Elementary Algebra	4	19	77
STATE COLLEGES			
Verbal Skills	33	46	21
Computation	41	28	31
Elementary Algebra	20	41	40
RUTGERS			
Verbal Skills	64	30	6
Computation	74	17	9
Elementary Algebra	57	32	12
NJIT			
Verbal Skills	39	41	20
Computation	78	16	6
Elementary Algebra	60	34	6

The system-wide proficiency results in this report may not necessarily coincide with the percentages of students placed by colleges into remedial courses for two reasons: a) not all students who are admitted and tested enroll in the institutions which tested them, and b) the NJCBSPT is but one of the indicators the colleges use in making placement decisions about individual students.

Eleven-Year Trends By Sector. Within the sectors, the following eleven-year patterns were noted:

- At the state colleges, the proportion of students in the "Appear Proficient" category for both computation and elementary algebra has improved by 4 to 12 percentage points. The proportion of students in the "Lack Proficiency" category for computation has decreased by as much as 6 percentage points. For elementary algebra, the proportion of students in the "Lack Proficiency" category has decreased by 12 percentage points.

- At Rutgers, gradual improvements were noted in all three skill areas, with the "Appear Proficient" category expanding by as much as 20 percentage points, while the "Lack Proficiency" category declined by as much as 11 percentage points.

- At NJIT, improvements of as much as 20 percentage points were also noted in the "Appear Proficient" category in elementary algebra.

- No changes were noted for the open admissions county community colleges.

Results for Recent High School Graduates

Students who graduated in the spring of 1988 and were admitted to New Jersey colleges for the fall of 1988 made up 64% (30,883) of the test takers. (This is two percent lower than in most recent years.) This group of students was slightly more proficient in all three areas than the total population tested.

In verbal skills:

29% appeared proficient,
43% appeared proficient in some areas, and
28% lacked proficiency.

In computation:

37% appeared proficient,
24% appeared proficient in some areas, and
39% lacked proficiency.

In elementary algebra:

21% appeared proficient,
33% appeared proficient in some areas, and
46% lacked proficiency.

Eleven-Year Trends For Recent High School Graduates. For the recent graduate cohort, a slight upward trend was noted:

- A 6 percentage point increase in the proportion of students who "Appear Proficient" in elementary algebra with only a small decrease (4%) in the category who "Lack Proficiency."

Recent Graduates and Homework

The relationship between proficiency in basic skills and the amount of time spent on high school homework was explored this year via new background questions on the test.

For the statewide data, the distribution of homework time reported varied little by discipline. In reading, writing, and mathematics, 40-45% of the students reportedly spent 1 to 3 hours on homework per week. A very low percentage of students (1-6%) reported spending 10 or more hours per week on homework in each of the disciplines surveyed.

In terms of the amount of self-reported mathematics homework, 52% of the high school graduates tested at NJIT and 48% of the high school graduates tested at Rutgers reportedly spent 4 or more hours per week. In contrast, only 38% of the group tested at the state colleges and 29% of the group tested at the county colleges reported spending the same amount of time on their high school mathematics homework.

Finally, when results for the 1988 NJ high school graduates were compared with those of 17-year-olds in the National Assessment of Educational Progress (NAEP) survey, the students admitted to NJ colleges reported spending more time per week on homework than did all 17-year-olds enrolled in high school mathematics classes nationally.

A review of the data indicated that the amount of time students reported spending on homework per week has a positive relationship to proficiency level. For example, students who reportedly spent 4 to 6 hours per week doing homework achieved on the average 5 scaled-score points higher on Reading Comprehension, English Composition, and Computation, and 7 scaled-score points higher on the Elementary Algebra subtest, than their counterparts who spent less than one hour per week on homework.

Overview

These NJCBSPT results provide a snapshot of the basic academic skills preparation of the Fall 1988 freshmen. In the past eleven years of reporting these results, the Basic Skills Council has noted three consistencies: 1) the large proportions of underprepared students; 2) the stability of the test results from year to year; and 3) the stability of the demographic variables in the student population. The male/female ratio, the full-time/part-time enrollment status, the percentage of recent high school graduates, the percentage of students from academic or college preparatory programs, and the percentage of students whose first language is English--all typically have not varied by more than a few percentage points over the years.

We have concluded that with such a large population (up to 52,000 students) tested annually, small changes of academic preparedness within subgroups can tend to cancel each other out. Statewide test results for a population of this size, in fact, do not change abruptly unless one or more new conditions arise, such as more restrictive college admissions policies, a major influx of adult, non-diploma holding students, or a major upgrading of the skill levels of recent high school graduates. Nevertheless, the present eleven-year retrospective has revealed gradual and slight statewide improvements in elementary algebra, primarily within the selective college sectors and among the most recent high school graduates. Within the four-year college sector, other improvements were noted in verbal skills (at Rutgers) and computation (Rutgers and the state colleges) which are also good news. The news is tempered by the fact that the trends are small and appear greater for the well-prepared students than for the poorly prepared.

INTRODUCTION

The New Jersey Basic Skills Assessment Program was designed in 1977 with two purposes. First, the testing aspect of the program was to provide information to aid colleges in placing students in appropriate courses during the freshman year. Second, the testing program was to report to the Board of Higher Education on the status of basic skills preparedness (in reading, writing, computation and elementary algebra) of the entering freshman class in public colleges and universities. These dual purposes remain central to the nature of the program.

"Basic Skills" refers to skills of thought and communication that an individual needs not only to take advantage of the opportunities offered by a college education but also to become a fully participating member of society. These are not the minimal "coping skills" or "life skills" which many consider essential to mere survival (e.g., balancing a checkbook, reading a magazine, filling out a job application). Rather, the "basic skills" of reading, writing, and mathematics are essential for thinking, learning, and succeeding within the context of a college curriculum. They are fundamental building blocks which underlie all adult learning and which the Basic Skills Council[1] believes are required for full participation in our society.

In 1978, the Council, in its first report to the Board of Higher Education, defined and clarified what it meant by "basic skills":

> By "basic skills" the Council means the tools of intellectual discourse used in common by participating members of all academic communities. These tools are the language of words and the language of mathematics. Students need these tools to extract information, to exercise and develop the critical faculties of the mind, and to express thoughts clearly and coherently.
>
> Without them, learning is impaired; communication is imprecise; understanding is impossible. A test of "basic skills," therefore, is a test to determine whether an individual has developed the practical working skills of verbal and mathematical literacy needed to take advantage of the learning opportunities that colleges provide.

---

[1]*The New Jersey Basic Skills Council is an advisory group of fifteen faculty and administrators drawn from each of the college sectors in the state of New Jersey and two members-at-large.*

> To define "basic skills" in this way is not to deny the validity of other modes of communication--within the artistic realm of discourse, for instance, the languages of music, motion, image, color, light, and texture express a universe of perceptions, feelings, and emotions which cannot be expressed adequately by words and numbers and logic alone. Nor is the Council's definition of the "basic skills" inimical to the value of diversity. We are, to the contrary, exceedingly sensitive to the differences between colleges: differences in their students; differences in their curricula and pedagogical philosophies; differences in their missions. But in one respect all colleges are identical: their ultimate purpose is to foster learning. The Council asserts unequivocally that the "basic skills" of reading, writing, and mathematics are a prerequisite to learning at the college level. If the possession of these skills is "standardization," we believe that standardization in this sense is good.

The Basic Skills Council continues to subscribe to this definition, which is embodied each year in the development of the New Jersey College Basic Skills Placement Test.

Nature of the Test

The NJCBSPT was developed by the Basic Skills Council in conjunction with the Educational Testing Service (ETS) and first administered to freshmen entering public colleges in the fall of 1978. To date more than 520,000 students have taken the NJCBSPT. The purpose of the test is placement at levels at and below the first-level college courses. It is designed to be relatively easy for well prepared students and to discriminate among underprepared students, thus affording colleges the needed range of scores to facilitate placement at several remedial levels. The test measures skills that students entering college should have. Indeed, the Basic Skills Council believes that the level of skills in reading, writing, and mathematics tested by the NJCBSPT is minimal for all students graduating from high school, whether or not they intend to enroll in college.

The NJCBSPT is a three-hour-and-twenty-minute examination consisting of an essay and four multiple-choice sections: Reading Comprehension, Sentence Sense, Computation, and Elementary Algebra. It is a criterion-referenced examination. The test questions address specific skills (such as understanding the main idea in a reading passage, writing in an organized fashion, solving algebraic equations, etc.) which are judged as the minimum necessary to begin college work. Students with adequate skills achieve high scores on the test; superior skills, however, cannot be discerned from the test. The distribution of scores on the multiple choice sections of the test is not

"normal" in the statistical sense, since the test is designed to make finer distinctions at the lower end of the range than at the upper end. (See Appendix A for further details on the NJCBSPT.)

The test is required of all freshmen (full- and part-time) entering New Jersey public colleges. In addition, eleven independent colleges in the state voluntarily administer the NJCBSPT to their entering freshmen. (See Appendix B for a list of these independent colleges and universities.)

A new version of NJCBSPT is issued in March of each year, and colleges administer the test locally, on their own schedules, through February of the following year. To promote test familiarity, colleges also mail to each admitted student an information bulletin which contains sample questions from each subtest. This information bulletin assists the students in becoming familiar with the test questions prior to their testing. The student answer sheets (and computer data tapes, if applicable) are sent to ETS for scoring and data analysis under contract with the Department of Higher Education.

Each new form of the NJCBSPT is statistically equated to the previous form. (See Appendix C for an explanation on equating procedure.) The scores are reported on a scale from 135 to 189 for verbal skills or "Total English," 139 to 180 for Computation and 148 to 190 for Elementary Algebra so as to preserve comparability from year to year. (See Appendix D for data on scaled score means and standard deviations for each test section over the last eleven years.)

Information on NJCBSPT publications and reports can be found on the inside back cover of this booklet. A technical analysis monograph on the NJCBSPT's statistical properties is provided by ETS each year and is available upon request.

Placement

Students are tested only after admission to college. The results of the tests are used, in conjunction with other information, for initial placement in English and mathematics courses. Proficiency categories for purposes of statewide reporting are defined by the Basic Skills Council (see Appendix E), but individual institutions set their

own algorithms for appropriate student placement using NJCBSPT test scores and other available information. No public college uses placement levels below the Council's suggested minimums. The Council has consistently recommended that placement be based not on one subtest score but on a combination of several test scores and other information (such as the Scholastic Aptitude Test scores, Test of Standard Written English score, and high school record).

Most public colleges and universities in the state use multiple criteria for placing students into either remedial or regular college-level courses. The system-wide result of these practices is that virtually all of the enrolled students in the "Lacked Proficiency" category and some of the students in the "Appeared Proficient in Some Areas" category are identified for remedial courses. The 1988 basic skills test results clearly indicate that the extent of remedial instruction that must be provided by our institutions has not diminished.

Reporting Format

Test results for typical large-scale achievement and/or aptitude tests (such as the Scholastic Aptitude Test) are reported in terms of mean scaled scores and standard deviations. While these measures are useful for these types of instruments (and are included here for the NJCBSPT in Appendix D), the Basic Skills Council believes that for an instrument whose purpose is placement, the percentages of students who need, might need, or do not need remediation are the most important data to transmit to the Board of Higher Education. Consequently, the results reported here are in terms of the percentages of students falling into three proficiency categories: "Lacked Proficiency," "Appeared Proficient in Some Areas," and "Appeared to be Proficient." Descriptions of these levels as related to test performance can be found in Appendix E. The uppermost category, "Appeared to be Proficient," is so named because the NJCBSPT does not contain a sufficient number of "difficult" items to ascertain with confidence that a given student is surely proficient in the skill area.

RESULTS

Statewide Findings

The proficiencies described in this report are based on the scores of 48,358 students tested at New Jersey public (and 11 private) colleges between March and October of 1988. This total represents a 9% increase over the number of students tested in 1987 by the same time. Not all these students actually enrolled in New Jersey's colleges by the fall of 1988. At the time of this writing, official statewide enrollment figures for new freshmen were not available.

This year's results differ little from those of previous years. Large proportions (in some sectors, the majority) of students enter our colleges lacking proficiency in at least some areas of reading, writing, computation, and elementary algebra. Table 1 and Figures 1-4 display the levels of proficiency exhibited by our entering freshmen in 1988. The verbal skills area is based on the NJCBSPT Total English score, a composite of the Reading Comprehension, Sentence Sense, and Essay subtests. Computation and Elementary Algebra scores are reported individually.

Table 1 gives the statewide results for 1978 through 1988. Over this time, the stability of the results is striking: the percentages have changed by no more than six points over the eleven years displayed. This stability is due, in part, to the large number of students tested. To effect a change of but one percentage point within a proficiency category, approximately 450 students must have higher or lower scores in a given year.

Of our entering students in 1988, in verbal skills:

33% lacked proficiency.
41% appeared proficient in some areas, and
26% appeared to be proficient.

In computation:

47% lacked proficiency.
23% appeared proficient in some areas, and
30% appeared to be proficient.

In elementary algebra:

59% lacked proficiency,
26% appeared proficient in some areas, and
15% appeared to be proficient.

Upward Trend in Elementary Algebra. One trend noted in the eleven-year statewide data is a slight improvement in the elementary algebra proficiencies. The proportion of students who "Appear Proficient" has gradually improved from 9 to 11% in the early years of testing to 15% today. The improvement is small and occurred only among the better-prepared students. The "Lack Proficiency" category has been relatively stable at 60%--a level indicating very weak mathematics performance statewide.

Results by College Sector

The percentages of students in each proficiency category for the four sectors of New Jersey public colleges (19 county colleges, nine state colleges, three campuses of Rutgers and the New Jersey Institute of Technology [NJIT]) also display the stability noted in the statewide results. Tables 2-5 present the results by sector for the years 1978-1988.

By virtue of their selective admissions processes, Rutgers, NJIT and the state colleges enroll higher percentages of students who "Appear Proficient" than do the county colleges, which enroll students through an "open admissions" policy. Variations in the proficiency percentages in Tables 2-5 must be interpreted cautiously. Yearly raw-to-scaled-score conversions and consequent "rounding" of the percentages in the proficiency categories can have as much as a three-percentage-point effect on the size of the category. Consequently, no trend should be inferred from these data until the difference in the categories reaches five percentage points in one year or is consistent over many years. By these criteria, the following longitudinal shifts have occurred:

- At the state colleges (Table 3), the proportion of students who "Appear Proficient" in computation has improved from 33-37% in the early years to 41% in 1988. There has also been a concomitant decrease in the proportion who "Lack Proficiency" from 33-37% to 31% in 1988.

- At the state colleges, the proportion of students who "Appear Proficient" in elementary algebra has improved from 8-10% in the early years to 20% in 1988 There has also been a decrease in the proportion of students in the "Lack Proficiency" category from 51-52% to 40% in 1988.

- At Rutgers (Table 4), the proportion of students who "Appear Proficient" in verbal skills has improved from the 44-48% level to 64% in 1988. The proportion who "Lack Proficiency" has decreased from 12-13% to 6% in 1988.

- In computation at Rutgers, the proportion of students who "Appear Proficient" has improved from the 63-64% level to 74% in 1988. The proportion of students who "Lack Proficiency" has declined from the 14-16% level to 9% in 1988.

- In elementary algebra at Rutgers, the proportion of students who "Appear Proficient" has improved from the 27-36% level in the early years to 57% in 1988--a substantial gain. The proportion of students who "Lack Proficiency" has been reduced from the 21-23% level to 12% in 1988.

- The small cohort size at NJIT means that test score changes for only a few students can change the proportions of students in each proficiency category more dramatically than in sectors with a large number of students. Thus year-to-year fluctuations in percentages are larger at NJIT than in other sectors, and trends cannot be as easily identified. It does appear, however, that the improvement in algebra proficiency noted in the other sectors also applies to NJIT. The proportion of students in the "Appear Proficient" category increased from the 40-54% level in the early years to 60% in 1988.

Recent High School Graduates

Of the 48,358 students tested, 30,883 or 64% were "recent" high school graduates--i.e., those who graduated in 1988 (see Appendix D, Part 6). These recent graduates are not evenly distributed among the college sectors. Of all recent graduates, 47% were tested at the two-year institutions; 24% were tested at the state colleges; 17%

were tested at Rutgers; 10% were tested at the private colleges; and 2% were tested at NJIT. The college sectors differ enormously in the percentage of their freshmen test-takers who are recent graduates. Recent graduates as a percentage of test-takers, in descending order, are 91% at NJIT and at Rutgers, 82% among the state colleges and 51% among the county colleges.

The proficiency percentages of recent graduates indicated that about one in four needed remedial work in reading or writing. Even higher percentages (at least 39% in computation and at least 46% in elementary algebra) needed remedial mathematics work. Table 6 displays the statewide results for recent high school graduates from 1978-1988. Figure 4 displays the following 1988 proficiency category breakdown:

In verbal skills:

29% appeared proficient,
43% appeared proficient in some areas, and
28% lacked proficiency.

In computation:

37% appeared proficient,
24% appeared proficient in some areas, and
39% lacked proficiency.

In elementary algebra:

21% appeared proficient,
33% appeared proficient in some areas, and
46% lacked proficiency.

Eleven-Year Trends For Recent High School Graduates. In Table 6, a slight upward trend is apparent. The proportion of students in the "Appear Proficient" category in elementary algebra has increased from 15% in the early years to 21% in 1988. Further, the proportion of students in the "Lack Proficiency" category has declined from 49-50% in the early years to 46% in 1988. The slight improvement in algebra proficiency is more pronounced for students who were already competent than for those who likely would have needed remediation.

Results by High School Program. Students admitted to the New Jersey public higher education system are diverse, not only in terms of their age and the year of their high school graduation, but also in the type of high school programs they took before going to college. It should be noted that according to the students, 75% of the 1988 high school graduates came from an academic or college preparatory program. The other program types included general (16%), career oriented, i.e., business, vocational or industrial arts (8%), and other (1%).

The college basic skills proficiency of students in these subgroups who come from NJ high schools varies considerably. Table 6A displays the verbal skills proficiency results for each of the high school programs. Two findings emerge from Table 6A. First, it is clear that the recent graduates from academic programs have considerably better reading and writing skills than students who elected other programs. Second, it is also clear, however, that only 36% of the "college-prep" students appeared proficient, and at least 18% would need remedial work in college.

High School Mathematics and College Proficiency. The traditional mathematics preparation for college is at least three years of high school courses, including Algebra I, II and Geometry. Course variations, however, exist in high school curricula. Many students take a fourth year of high school mathematics, but only a minority (about 14% of the recent graduates tested) report taking calculus during this fourth year. Tables 7 and 8 display the relationship between high school mathematics curricula and subsequent proficiency levels on the NJCBSPT Computation (Table 7) and Elementary Algebra (Table 8) subtests. (Data in Tables 7 and 8 include only New Jersey graduates who reported that their best language was English.) The data, as in previous years, indicate that the groups of students who took fewer than four years of mathematics are highly unlikely to exhibit proficiency in elementary algebra. For example, in Table 8, course category #2 includes the 1,746 students who took only one year of algebra in high school. Of these, only three students scored high enough to "Appear Proficient in Some Areas" in elementary algebra and no students scored high enough to reach the "Appear Proficient" category. In category #5, of the students who took the typical "college prep" program of Algebra I, II and Geometry, only 3% "Appeared Proficient" in elementary algebra. This means that of 8,140 students in this category, only 229 answered 25 or more of 30 elementary algebra

questions correctly. In category #9, students who completed a "college prep" sequence that included calculus were much more likely to "Appear Proficient" (65%) in elementary algebra. Table 14 indicates that Rutgers and NJIT together enroll 49% (2,630 of 5,329) of all the tested students who took calculus in their high school years.

Three generic levels of preparation emerge from the course categories in Tables 7 and 8. First, students who have completed two (or fewer) years of mathematics have little chance of "Appearing Proficient" in elementary algebra. Second, students who complete three years of mathematics (including geometry and trigonometry) have approximately a 19% chance of "Appearing Proficient" in elementary algebra. Finally, students who complete four years of mathematics including calculus have almost a two-thirds chance of "Appearing Proficient" in elementary algebra. The NJCBSPT Elementary Algebra subtest is composed of direct questions on algorithmic skills typically learned in the ninth grade.

It should be noted that the study of calculus is not necessarily the causal variable in ensuring proficiency in algebra. It is probably true that only the best prepared students from the three-year high school math sequence elect calculus. However, students who take senior math courses other than calculus also display slightly higher algebra proficiencies than the students completing only the three-year sequence. The Council would like to see a strengthening of all mathematics instruction--from arithmetic through elementary algebra--so that more students will be sufficiently prepared to elect the fourth year of high school mathematics.

The 1988 recent graduates report enrolling in more mathematics courses than the recent graduates of 1987. Specifically, (as seen in Table 15A), the recent graduates were more likely in 1988 to add a "General Math" course (46% vs. 37%) to their high school curriculum. This increase is the largest percentage change in the eleven years of data displayed in the table.

1988 High School Graduates and Homework

The relatively low proficiencies of our incoming freshmen have been an annual concern. As noted in last year's analysis, the need for remediation for incoming freshmen is at least as great in other states that have collected data on

testing/placement. The relationship between proficiency in basic skills and the amount of time spent on high school homework was explored this year via new background questions on the test forms. The Council was interested in two issues: a) How much homework do our recent high school graduates report having done? and b) What is the relationship between the amount of homework reported and the student's subsequent scores on the NJCBSPT?

Amount of Homework. Students were asked to check the category (less than one hour, 1-3 hours, 4-6 hours, 7-9 hours or 10 or more hours) that best described their high school homework weekly effort for reading, writing, and mathematics. For the statewide data, the distribution of self-reported homework hours varied little by discipline. In reading, writing, and mathematics, 40-45% reported doing 1-3 hours of homework per week. This was, by a wide margin, the most common response provided. See Figure 5 for further details. A very low percentage of students (1-6%) reported spending 10 or more hours per week on any of the disciplines surveyed.

In terms of the amount of self-reported mathematics homework by sector, students at NJIT reportedly spent the most time per week on homework: 52% spent four hours or more. At Rutgers, 48.3% reported that they spent four hours or more per week. At the state colleges and the county colleges, the corresponding percentages are 37.6% and 28.8% respectively. See Figure 6 for a more detailed analysis by sector of the self-reported homework completed.

Homework and Proficiency. In all skill areas, the relationship between self-reported homework hours completed and proficiency was a positive one. That is, the greater the amount of time reportedly spent on homework, the higher the scores on the relevant sections of the NJCBSPT in general. Of course, it would be naive to suggest that the amount of homework completed per week is the sole determinant of students' performance; indeed, many factors likely interact along with the amount of homework in determining student performance. Nonetheless, the observed relationship between self-reported homework and proficiency across all skill areas is a strong one. By way of illustration, students who reported spending 4-6 hours per week on homework achieved, on the average, 5 scaled-score points more than their counterparts who reported spending less than one hour. This pattern was even more evident in elementary algebra, where the score gain was more pronounced (i.e., 7 scaled-score points on the average).

In reading, students who reported completing 4-6 hours of homework per week achieved a mean scaled score of 164 on the Reading Comprehension section of the NJCBSPT. Those who reported completing less than one hour of homework per week achieved a mean scaled score of 159. Students who reported completing 4-6 hours of writing homework per week achieved a mean scaled score of 166 on the composite English Composition test. Those who reported completing less than one hour of writing homework per week achieved a mean scaled score of 161.

In mathematics, students who reported completing 4-6 hours of math homework per week achieved a mean scaled score of 169 on the Computation subtest and a score of 172 on the Elementary Algebra section. Those who reported completing less than one hour of math homework per week achieved a mean scaled score of 164 on the Computation test and a score of 165 on Elementary Algebra. See Figures 7-10 for further details concerning the relationship between homework and proficiency.

In summary, students who reported doing an hour or less of homework per week generally fell into the "Lack Proficiency" category in each of the four skill areas. Students who reported 1-3 hours of homework per week were often in the "Appear Proficient in Some Areas" category. Students reporting 4 or more hours of homework per week were generally above the "Lack Proficiency" category.

These findings are consistent with other studies that have explored the relationship between the amount of self-reported homework per week and students' academic achievement/attainment. For example, one of the better known studies on the state of national education is the *"Report Cards"* issued by the National Assessment of Educational Progress (NAEP).

Comparison of NJCBSPT Data With NAEP Findings. In June, 1988, ETS published the results of a 1986 NAEP study of mathematical performance of American students, ages 9, 13, and 17. In this study, the relationship between self-reported homework done and proficiency level achieved was examined. While the survey questions used differ somewhat from those contained in the NJCBSPT, some general comparison can be made between the national results and those obtained here in New Jersey.

First, as one might expect, students admitted to colleges in New Jersey reported that they spent somewhat more time on mathematics homework than did all surveyed 17-year-olds enrolled in high school mathematics classes nationally. While 33% of our 1988 high school graduates reported completing 4 or more hours of homework per week, nationally only 13% of the 17-year-olds reportedly completed more than 4 hours of homework per week. In New Jersey, 19% indicated that they completed less than one hour of homework per week; in contrast, 40% of the 17-year-olds in the NAEP sample reported completing only one hour of homework per week.

Second, the positive relationship observed in the present study between the amount of homework completed and proficiency in mathematics is in agreement with the results obtained in the 1986 NAEP study. The latter report concluded that:

> "Particularly at the higher grades, the more [the] homework, the higher the mathematics proficiency."[1]

Non-Recent High School Graduates

Thirty-five percent of the students tested received their high school diplomas before 1988 (see Table 12). In fact, 20% of the statewide total of students tested received their diplomas prior to 1986. The great majority of the non-recent graduates tested (84%) were tested in the county community colleges.

The test results for the non-recent graduates are much lower than for the recent graduates. Table 9 displays the proficiency levels seen in 1988 for these students. A comparison of Table 6 (recent graduates) with Table 9 reveals that, whereas 28% of 1988 graduates were in the "Lack Proficiency" category for verbal skills, 42% of the non-recent graduates fell into the same category. In computation, 39% of recent graduates "Lacked Proficiency" compared to 62% of the non-recent graduates. In elementary algebra, 46% of the recent graduates "Lacked Proficiency" compared with 81% of the non-recent graduates.

---

[1]***The Mathematics Report Card: Are We Measuring Up?.*** *Trends and Achievement Based on the 1986 National Assessment. Educational Testing Service, 1988. p. 106.*

It should be understood that these comparisons are made not between graduating classes from year to year but between the 1988 class and other students who deferred their college going for one or more years.

Demographic Information

Students taking the NJCBSPT answer a series of "Background Information" questions. Summary data on this self-reported information are presented in Tables 10-15 and 15A. On most of the variables, the population is as consistent across time as the test results have been: the majority (56%) of students in the system continue to be female (Table 10); 75% expect to enroll in college full-time (Table 11); 62% took a traditional academic high school program before going to college (Table 13).

Over the last 11 years a consistent five percent of the test takers reported that English was not their best language and 17% said they spoke a language other than English at home (Table 15). The Basic Skills Council's policy is to defer the testing of students for whom English is a second language until they complete their English instruction. The consistency of the five percent figure for "ESL" test-takers indicates that our colleges have not yet seen the increased proportion of ESL students that has been predicted from the increase of such persons in the general population.

DISSEMINATION OF NJCBSPT RESULTS

To Colleges

Since a central purpose of the NJCBSPT is to aid in placement of students into appropriate freshman courses prior to registration, the colleges are provided with summary reports six times during the testing year. During the peak testing period (summer), essays are read weekly (by two trained readers) and colleges can arrange for weekly reporting of results.

To Students

The Student Information Bulletin contains up-to-date information about the test along with sample test questions. Sufficient quantities of these bulletins are sent to the colleges for distribution to students prior to their taking the test. ETS mails individual student reports (scores) to the colleges. The institutions then inform the students of the results and use the individual student information for placement.

To High Schools

In the late spring, the accumulated results of each high school's alumni are sent in aggregate form and by individual student scores (for the students who signed the permission release statement on the test). This year's report to the principals will contain an analysis of responses to each test question (e.g., the percentage of the class that was successful). In addition, a copy of this statewide report with a cover letter from the School Boards Association is sent to each school board chairperson.

To the Board of Higher Education and the Higher Education Community

This statewide report is provided not only to the Board of Higher Education but also to all public and private institutions in New Jersey, to other state higher education agencies, and upon request to other interested parties.

OUTCOMES OF SKILLS-DEFICIENT STUDENTS IN COLLEGE

This report is one of a series that the Basic Skills Council presents to the Board of Higher Education. The follow-up to this report is the *Report on the Effectiveness of Remedial Programs*, a two-year analysis of the outcomes of the students who are placed into over a hundred remedial programs in New Jersey's public colleges and universities. Many severely deficient students require three to four semesters to complete their remedial work. Outcomes data for the students tested and reported on here will be collected in the summer of 1989.

Reports on previous two-year cohorts have indicated that for those underprepared students who complete their college's prescribed remedial sequence, their skills are upgraded to a level where they can be retained within, and hence profit from, higher education. Those students completing remediation across all skill areas exhibit two-year retention rates similar to or higher than non-remedial students. In subsequent college-level courses that assume proficiency in the skills just remediated, students who complete remediation generally pass the courses at rates similar to non-remedial students. In contrast, the "successful survival rate" of students who did not complete remediation is only about a third that of those students who completed remediation.

Beginning with the students who entered in Fall 1987, those exiting college remedial programs were re-tested with an alternate form of the NJCBSPT. The expectation is that the preponderance of such students in a given program will, on re-test, reach or exceed their college's placement minimums for entry into the college-level writing and mathematics courses. Such re-testing will not be the only measure which will determine whether a student moves on to the college-level course. Faculty judgment on course grades and exams, not merely the NJCBSPT score, will continue to determine whether individual students move into college-level courses. The Basic Skills Council will monitor the results in terms of percentages in each program who reach the minimum standard. This re-test performance, in aggregate form, is one of the multiple indicators the Basic Skills Council uses to assess the effectiveness of public college remedial programs.

CONCLUDING COMMENTS

Previous reports in this series have presented results data in five-year segments. With a large testing population (up to 52,000 students annually) and a test carefully equated from year to year, only small changes in proficiency categories sizes were evident over 11 years. In fact, stability of test results and of the demographic characteristics of the test-takers is the major finding of this testing program. The percentages of underprepared students entering our institutions continue to be larger than faculty would like.

Changes in the effectiveness of kindergarten-through-twelfth grade statewide education are not easily discerned on a year-to-year basis. By stepping back from the annual "trees" to view the 11-year "forest," we have noted slight upward trends statewide in elementary algebra, and in verbal skills and computation at the more selective institutions. This good news is tempered by the fact that the trends are small and appear greater for the well-prepared students than for the poorly prepared. We note that the high school cohort required to pass the ninth grade level High School Proficiency Test (HSPT) will not arrive at the colleges until Fall 1989. They will, hopefully, continue the trend of improved proficiencies in basic skills. More encouraging for the continuation of improvement is the initiation of the new, more stringent eleventh grade level HSPT. The first class to be required to pass the eleventh grade HSPT will reach college in the fall of 1995. We are optimistic that the increased standards created by these initiatives will continue the positive trends noted in this report.

Further, the Council endorses the Department of Higher Education's own initiatives to help continue these favorable trends in student preparation by:

- continuing to expand its newer initiatives in giving grants for college/school collaboration;

- fostering "academic alliances" among middle/high school and college faculty, particularly in the disciplines of reading, writing and mathematics;

- working with the Department of Education to assure that the new eleventh grade HSPT will require standards of achievement that will serve to lessen the need for college remediation;

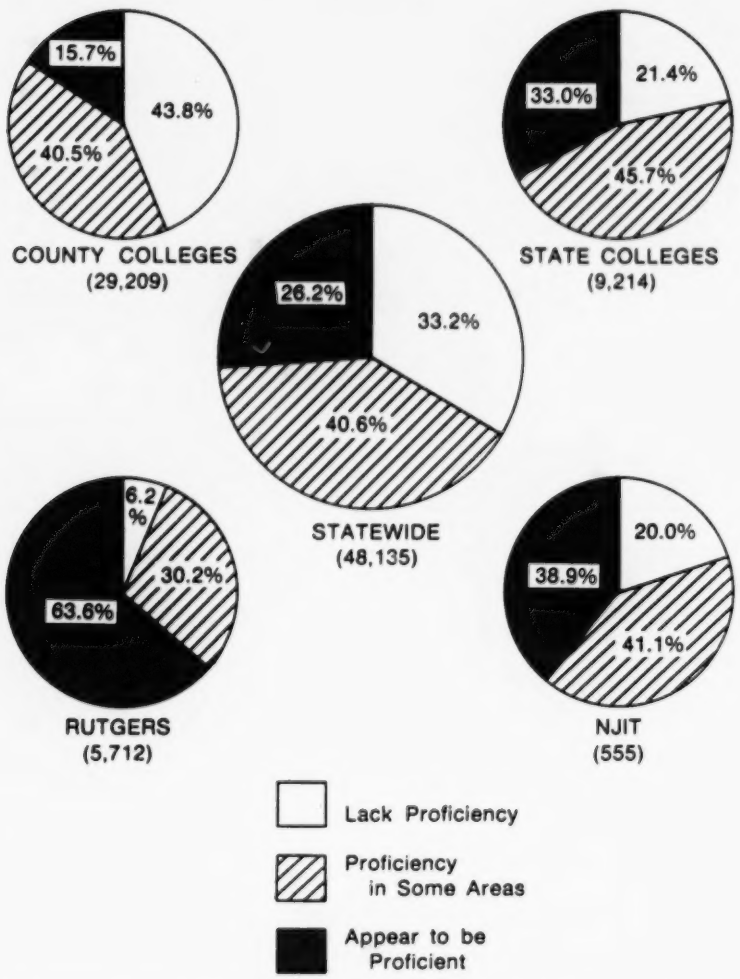
- working to make available faculty teams to visit high schools, discuss placement test results and discuss college proficiency expectations with principals and curriculum supervisors; and

- encouraging school boards to review the NJCBSPT results as one of several indicators of educational effectiveness.

FIGURE 1

Levels of Student Proficiency by Sector
Fall 1988

Verbal*



*Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

FIGURE 2

Levels of Student Proficiency by Sector
Fall 1988

Computation

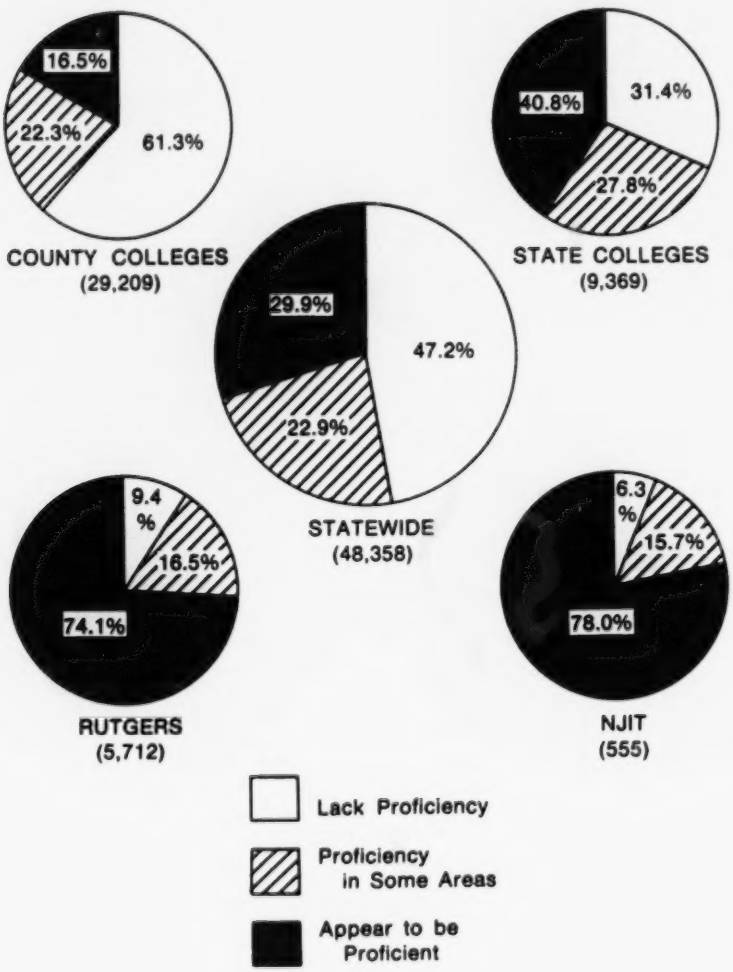


FIGURE 3

Levels of Student Proficiency by Sector
Fall 1988

Elementary Algebra

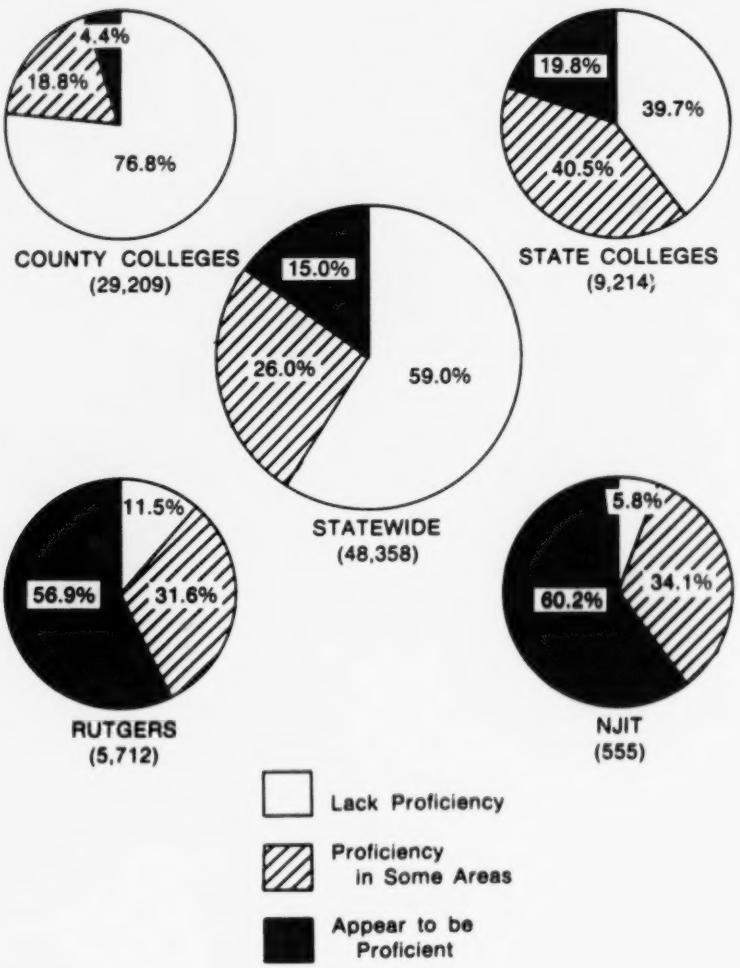
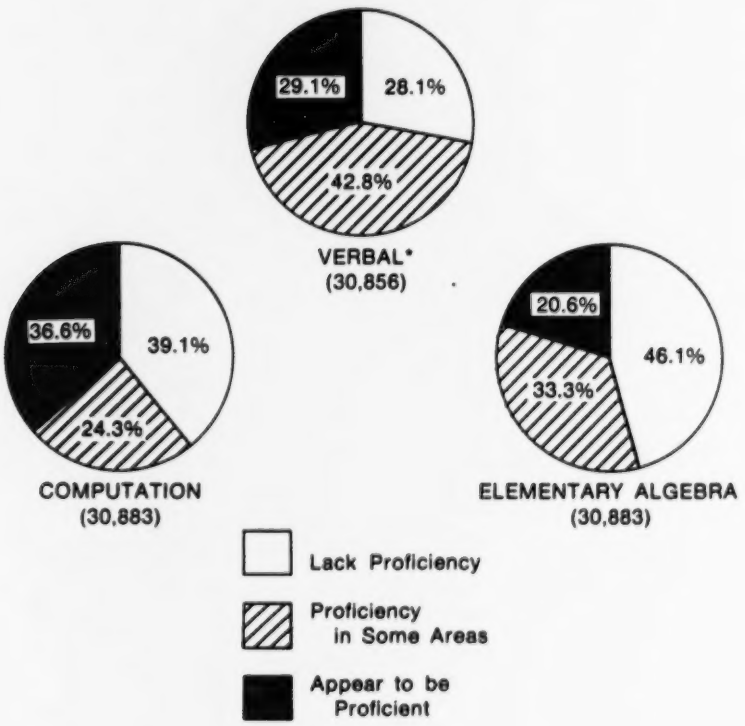


FIGURE 4

Levels of Student Proficiency by Skill Area
Recent High School Graduates
Fall 1988



*Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

FIGURE 5

HOURS OF HOMEWORK BY SKILL AREA

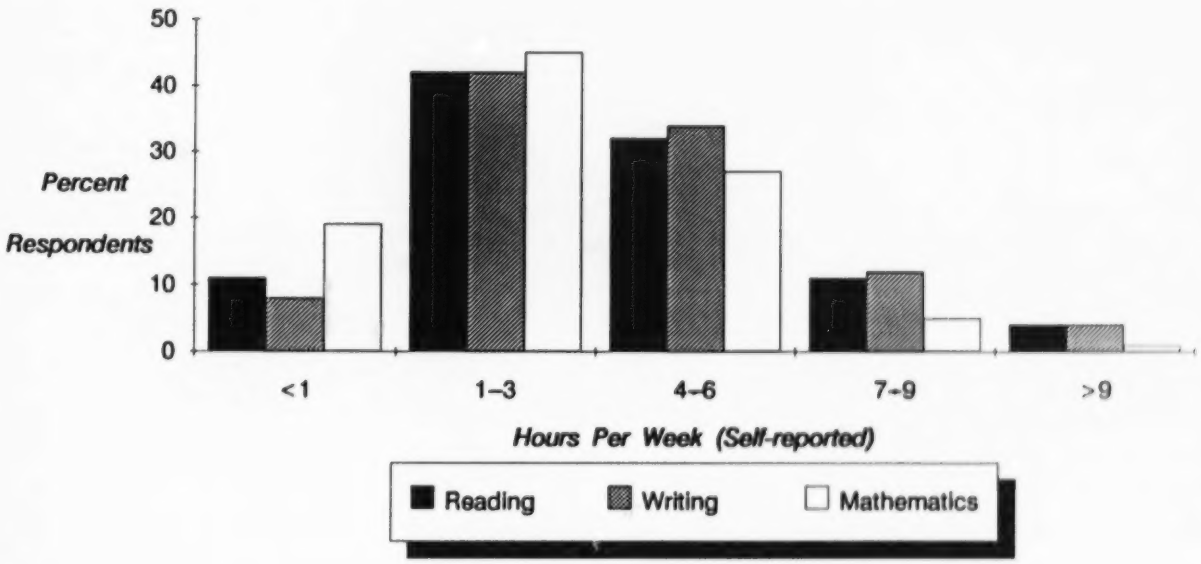


FIGURE 6

HOURS OF MATH HOMEWORK BY SECTOR

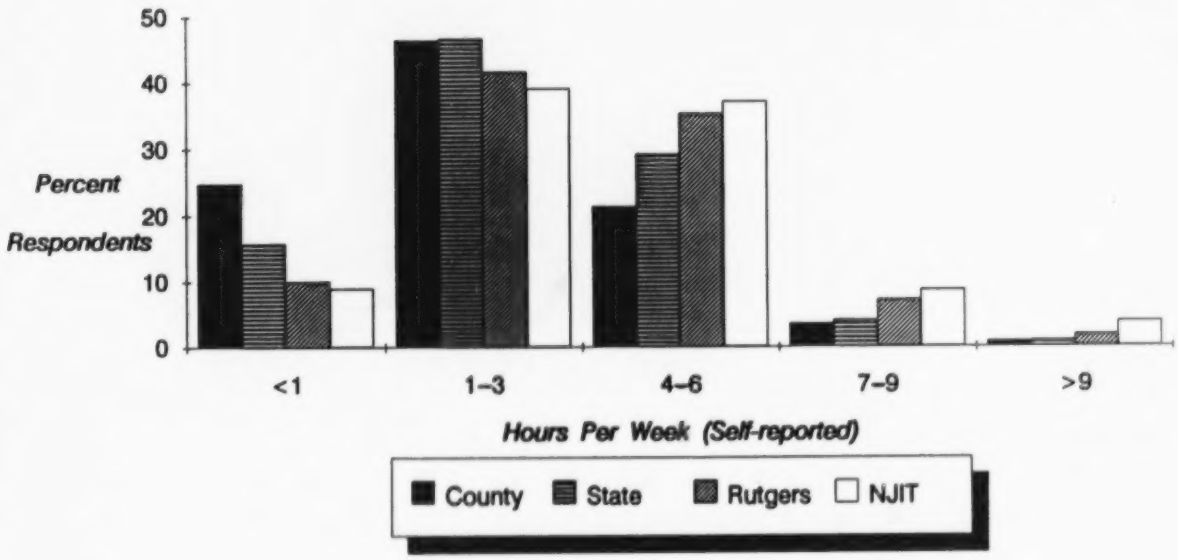


FIGURE 7

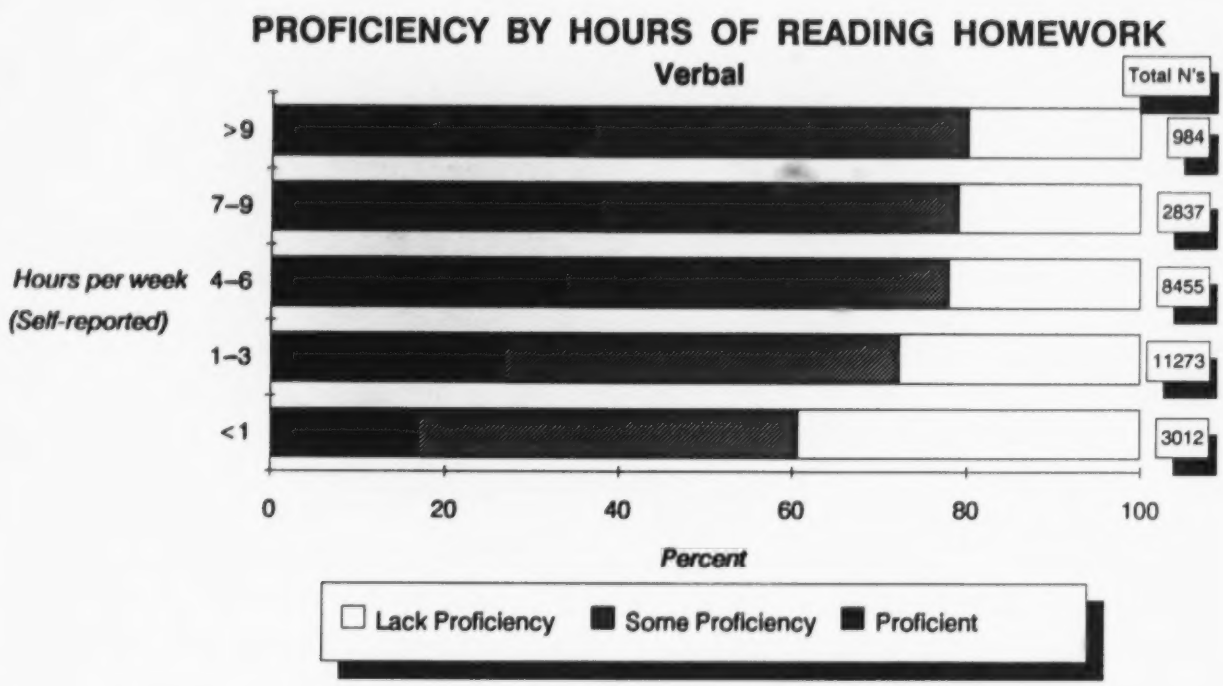

PROFICIENCY BY HOURS OF READING HOMEWORK
Verbal
Total N's
>9
7–9
4–6
1–3
<1
984
2837
8455
11273
3012
Hours per week
(Self-reported)
0
20
40
60
80
100
Percent
Lack Proficiency
Some Proficiency
Proficient

FIGURE 8

PROFICIENCY BY HOURS OF WRITING HOMEWORK

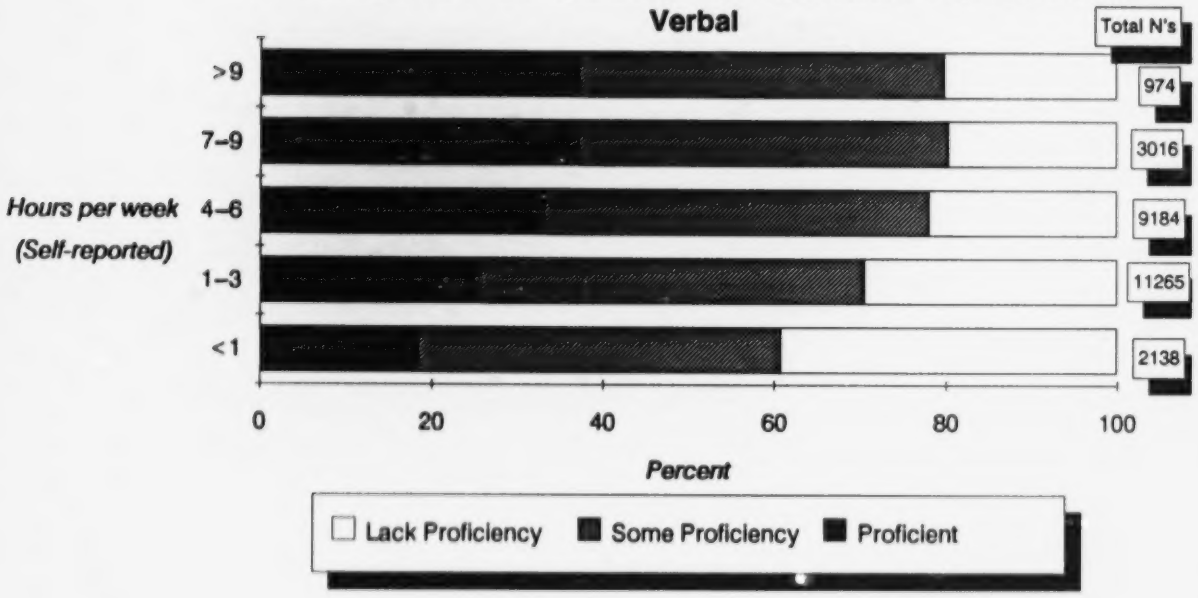


FIGURE 9

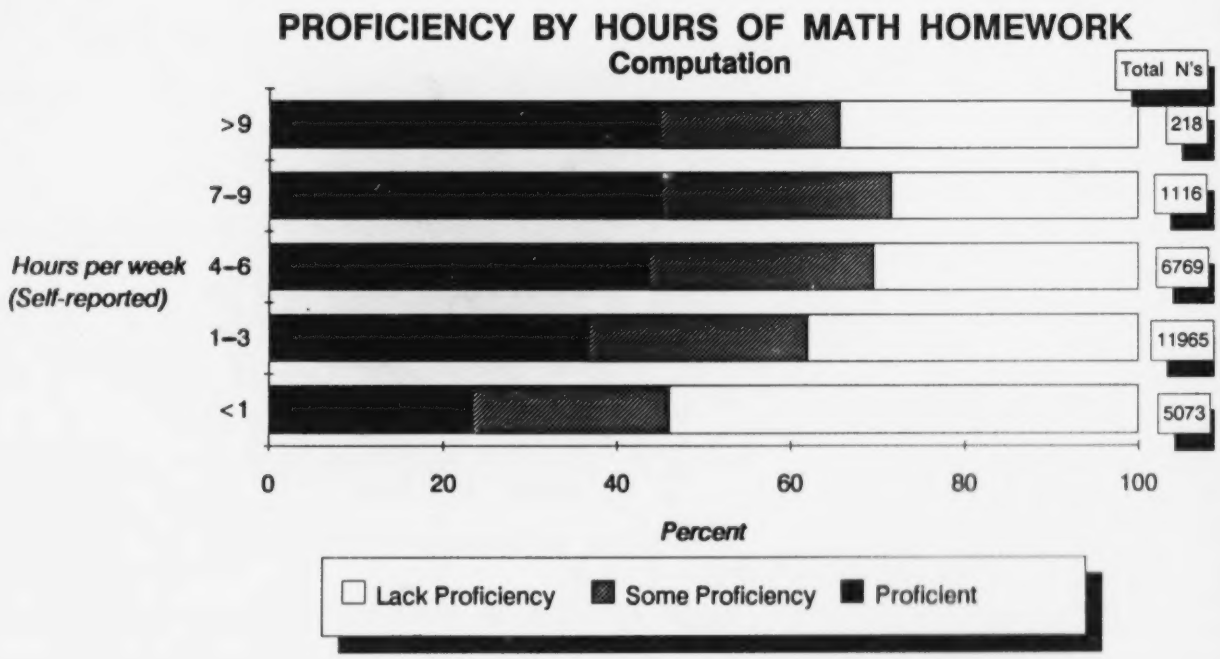

PROFICIENCY BY HOURS OF MATH HOMEWORK
Computation
Total N's
>9
7–9
4–6
1–3
<1
218
1116
6769
11965
5073
Hours per week
(Self-reported)
0
20
40
60
80
100
Percent
Lack Proficiency
Some Proficiency
Proficient

FIGURE 10

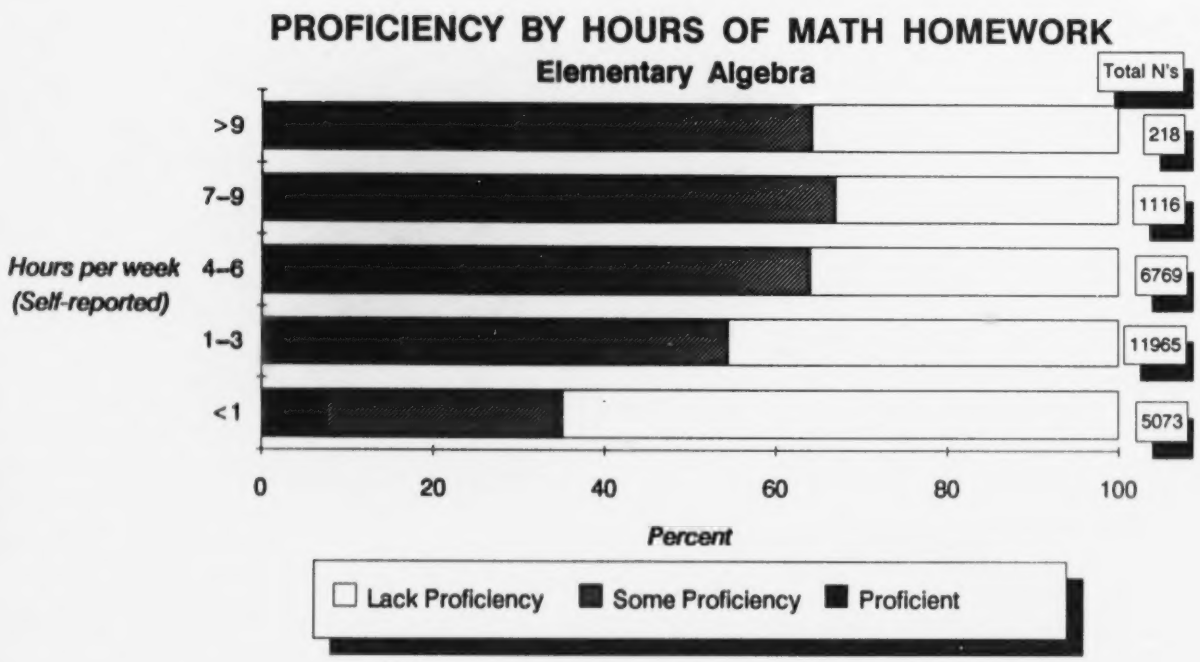

PROFICIENCY BY HOURS OF MATH HOMEWORK
Elementary Algebra
Total N's
>9
7–9
4–6
1–3
<1
218
1116
6769
11965
5073
Hours per week
(Self-reported)
0
20
40
60
80
100
Percent
Lack Proficiency
Some Proficiency
Proficient

TABLE 1*

Eleven Year Comparison of Statewide Test Results[1]

1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Number of Students Tested	42,984	47,725	47,951	49,833	51,135	51,321	46,465	44,344	44,284	42,603		48,358
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	30	32	31	32	31	31	33	34	33	34	33	15,885
Appear Proficient in Some Areas	46	43	40	41	41	40	41	40	41	40	41	19,735
Appear to be Proficient	24	25	28	27	27	29	26	26	27	27	26	12,515
COMPUTATION												
Lack Proficiency[2]	41	47	45	44	46	45	47	44	47	46	47	22,807
Appear Proficient in Some Areas	25	23	24	25	22	25	25	24	23	23	23	11,086
Appear to be Proficient	34	30	30	30	32	30	28	32	30	31	30	14,465
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	60	61	62	62	61	60	60	59	60	57	59	28,512
Appear Proficient in Some Areas	31	28	27	27	28	28	28	29	26	29	26	12,581
Appear to be Proficient	9	11	11	11	11	12	12	12	15	15	15	7,265

*Includes students who were admitted but who may not have enrolled in college after being tested. Students from the participating independent colleges are included in the statewide totals. (See Appendix B for a list of these colleges.)

[1]See Appendix E for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 2

Eleven Year Comparison of Sector Test Results[1]

County Colleges
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Number of Students Tested	23,390	27,230	28,464	30,073	30,380	30,677	28,191	26,288	26,322	24,117		29,209
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	39	41	41	42	41	42	44	45	43	46	44	12,812
Appear Proficient in Some Areas	45	42	40	40	40	40	40	40	40	39	41	11,648
Appear to be Proficient	16	17	19	18	19	18	16	16	16	15	16	4,659
COMPUTATION												
Lack Proficiency[2]	53	60	58	56	58	58	60	58	61	62	61	17,900
Appear Proficient in Some Areas	24	22	24	25	21	24	23	24	23	22	22	6,500
Appear to be Proficient	22	18	19	20	21	18	17	19	16	16	17	4,809
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	77	78	78	78	77	76	76	77	77	76	77	22,442
Appear Proficient in Some Areas	20	18	18	18	19	20	20	20	18	20	19	5,479
Appear to be Proficient	3	4	4	4	4	4	4	4	5	4	4	1,288

[1]See Appendix E for a description of proficiency categories.
[2]Includes those students not attempting this portion of the test.

TABLE 3

Eleven Year Comparison of Sector Test Results[1]
State Colleges
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Number of Students Tested	10,840	11,487	10,669	10,338	11,328	10,981	9,767	9,237	8,817	9,369		9,214
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	24	24	22	22	21	20	22	24	23	22	21	1,918
Appear Proficient in Some Areas	50	47	44	45	45	44	47	47	47	44	46	4,201
Appear to be Proficient	27	29	34	33	34	36	31	30	31	34	33	3,014
COMPUTATION												
Lack Proficiency[2]	33	37	34	33	35	33	36	31	36	33	31	2,893
Appear Proficient in Some Areas	30	30	29	31	26	30	31	30	29	29	28	2,559
Appear to be Proficient	37	33	36	36	39	37	34	39	35	38	41	3,762
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	52	51	49	50	49	46	47	44	46	42	40	3,654
Appear Proficient in Some Areas	40	39	40	40	40	42	41	45	39	42	41	3,735
Appear to be Proficient	8	10	10	10	11	13	12	11	5	16	20	1,825

[1]See Appendix E for a description of proficiency categories.
[2]Includes those students not attempting this portion of the test.

48

49

TABLE 4

Eleven Year Comparison of Sector Test Results[1]

Rutgers
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1988	1988	
Number of Students Tested	7,322	7,700	6,237	6,559	6,219	6,251	5,856	6,550	6,753	5,573		5,712
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	12	13	11	9	9	6	7	7	7	7	6	342
Appear Proficient in Some Areas	44	39	34	35	39	30	33	33	32	30	30	1,712
Appear to be Proficient	44	48	56	56	53	64	60	60	61	63	64	3,653
COMPUTATION												
Lack Proficiency[2]	14	16	13	15	13	10	10	9	11	11	9	536
Appear Proficient in Some Areas	21	21	20	21	18	18	20	18	19	17	17	941
Appear to be Proficient	64	63	66	64	69	72	70	72	70	72	74	4,235
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	23	21	19	19	18	14	13	13	13	13	12	655
Appear Proficient in Some Areas	50	43	42	43	45	39	39	44	36	35	32	1,807
Appear to be Proficient	27	36	38	38	37	47	48	43	51	52	57	3,250

[1]See Appendix E for a description of proficiency categories.
[2]Includes those students not attempting this portion of the test.

TABLE 5

Eleven Year Comparison of Sector Test Results[1]

NJIT
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Number of Students Tested	690	650	687	679	722	599	541	497	472	489		555
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	21	18	16	14	15	15	20	23	19	24	20	111
Appear Proficient in Some Areas	47	44	40	42	43	42	38	43	42	41	41	228
Appear to be Proficient	32	38	44	44	42	44	43	33	39	35	39	216
COMPUTATION												
Lack Proficiency[2]	3	5	3	5	4	5	8	5	6	11	6	35
Appear Proficient in Some Areas	14	13	12	13	11	13	17	14	16	14	16	87
Appear to be Proficient	82	83	85	82	85	82	75	80	78	75	78	433
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	5	3	3	3	5	4	6	4	4	8	6	32
Appear Proficient in Some Areas	54	43	41	40	37	35	38	43	30	34	34	189
Appear to be Proficient	40	54	56	57	58	61	56	52	66	58	60	334

[1] See Appendix E for a description of proficiency categories.
[2] Includes those students not attempting this portion of the test.

TABLE 6

Eleven Year Comparison of Statewide Results for Recent High School Graduates[1]

1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Number of Students Tested	28,846	29,943	29,355	30,540	31,964	32,236	28,466	27,291	27,447	28,169		30,883
	%	%	%	%	%	%	%	%	%	%	%	#
VERBAL												
Lack Proficiency	27	27	26	28	26	26	29	29	28	28	28	8,668
Appear Proficient in Some Areas	44	43	44	44	45	43	44	43	43	42	43	13,202
Appear to be Proficient	29	30	30	28	29	31	28	28	29	30	29	8,986
COMPUTATION												
Lack Proficiency[2]	34	39	37	38	39	38	38	35	39	38	39	12,076
Appear Proficient in Some Areas	26	25	27	27	23	26	27	26	25	25	24	7,502
Appear to be Proficient	39	36	36	35	38	36	35	39	36	37	37	11,305
ELEMENTARY ALGEBRA												
Lack Proficiency[2]	50	49	49	50	50	48	47	46	46	44	46	14,224
Appear Proficient in Some Areas	35	35	36	35	36	35	37	38	33	36	33	10,296
Appear to be Proficient	15	15	14	15	14	17	16	16	20	20	21	6,363

[1]See Appendix E for a description of proficiency categories; GED recipients are excluded from the table.
[2]Includes those students not attempting this portion of the test.

TABLE 6A

1988 New Jersey High School Graduates*
Verbal Proficiency Categories by High School Program Type

High School Program	n	Lacking Proficiency	Appear Proficient In Some Areas	Appear Proficient
College Prep	20,195	18%	46%	36%
General	3,964	52%	37%	11%
Bus/Voc/Ind Arts	2,138	53%	40%	7%
GED	49	65%	29%	6%
Other	146	69%	22%	9%
Sub Total	26,495			
Out of State and/or Limited English	4,388			
All 1988 Graduates	30,883	28%	43%	29%

*Recent High School Graduates are those who graduated the spring prior to their enrollment in college. Limited English proficient students are excluded, as well as out of state graduates.

TABLE 7

Relationship Between Mathematics Courses Completed in High School and the Computation Proficiency[1] of the Students Tested: 1987 vs. 1988, New Jersey Recent High School Graduates Only[2]

Course Category	1988 Total No.	Lack Proficiency 1988 No.	Lack Proficiency 1987 %	Lack Proficiency 1988 %	Appear Proficient In Some Areas 1988 No.	Appear Proficient In Some Areas 1987 %	Appear Proficient In Some Areas 1988 %	Appear to be Proficient 1988 No.	Appear to be Proficient 1987 %	Appear to be Proficient 1988 %
1. Business Math or General Math	1346	1233	90	92	103	9	8	10	1	1
2. Algebra I	1746	1400	81	80	280	16	16	66	3	4
3. Algebra I & Geometry	2680	1874	70	70	601	23	22	205	6	8
4. Algebra I & II	640	447	70	70	145	22	23	48	8	8
5. Algebra I, Geometry & Algebra II	8140	3645	44	45	2679	34	33	1816	22	22
6. Trigonometry (No Senior Math)	5255	981	19	19	1588	30	30	2686	50	51
7. Senior Math (No Trigonometry)	1011	185	20	18	307	30	30	519	51	51
8. Algebra I & II Geometry & Trigonometry	1563	144	9	9	328	23	21	1091	68	70
9. Calculus (No Senior Math)	2880	99	4	3	351	12	12	2430	84	84
10. Senior Math & Calculus	675	19	3	3	71	14	11	585	84	87
Overall	25,936	10,027	38	39	6,453	25	25	9,456	37	36

[1]See Appendix E for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

TABLE 8

Relationship Between Mathematics Courses Completed in High School and the Elementary Algebra Proficiency[1] of the Students Tested: 1987 vs. 1988, New Jersey Recent High School Graduates Only[2]

Course Category	1988 Total No.	Lack Proficiency 1988 No.	Lack Proficiency 1987 %	Lack Proficiency 1988 %	Appear Proficient In Some Areas 1988 No.	Appear Proficient In Some Areas 1987 %	Appear Proficient In Some Areas 1988 %	Appear to be Proficient 1988 No.	Appear to be Proficient 1987 %	Appear to be Proficient 1988 %
1. Business Math or General Math	1346	1332	99	99	14	1	1	0	0	0
2. Algebra I	1746	1693	95	97	53	4	3	0	0	0
3. Algebra I & Geometry	2680	2479	90	93	198	10	7	3	0	0
4. Algebra I & II	640	500	77	78	135	22	21	5	1	1
5. Algebra I, Geometry & Algebra II	8140	4335	52	53	3576	44	44	229	4	3
6. Trigonometry (No Senior Math)	5255	1110	21	21	3130	55	60	1015	23	19
7. Senior Math (No Trigonometry)	1011	228	23	23	604	55	60	179	22	18
8. Algebra I & II, Geometry & Trigonometry	1563	155	9	10	817	52	52	591	38	38
9. Calculus (No Senior Math)	2880	97	3	3	913	28	32	1870	69	65
10. Senior Math & Calculus	675	16	3	2	165	27	24	494	70	73
Overall	25,936	11,945	44	46	9,605	36	37	4386	20	17

[1]See Appendix E for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

TABLE 9*

1988 Test Results Of Non-Recent Graduates[1]

	1988	
	#	%
VERBAL		
Lack Proficiency	7,140	42
Appear Proficienct in Some Areas	6,305	37
Appear to be Proficient	3,457	20
COMPUTATION		
Lack Proficiency[2]	10,479	62
Appear Proficienct in Some Areas	3,593	21
Appear to be Proficient	2,907	17
ELEMENTARY ALGEBRA		
Lack Proficiency[2]	13,765	81
Appear Proficiency in Some Areas	2,254	13
Appear to be Proficient	958	6

*Includes those who may not have enrolled in college after being tested.

[1]See Appendix E for a description of proficiency categories; "non-recent" graduates are students whose diploma was received prior to this year of testing.

TABLE 10

Students Tested, Fall 1988, by Gender Within Sector

Gender	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Male	20,986	43	12,728	44	3,815	41	2,668	47	463	83
Female	27,017	56	16,227	56	5,354	58	3,021	53	92	17
No Response	355	1	254	1	45	1	23	0	0	0
TOTAL TESTED	48,358		29,209		9,214		5,712		555	

*Students from the participating independent colleges are included in statewide totals.

TABLE 11

Students Tested, Fall 1988, by Anticipated Enrollment Status Within Sector

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Full-Time	36,380	75	19,016	65	7,943	86	5,474	96	549	99
Part-Time	11,194	23	9,618	33	1,155	13	213	4	6	1
No Response	784	2	575	2	116	1	25	0	0	0
TOTAL TESTED	48,358		29,209		9,214		5,712		555	

*Students from the participating independent colleges are included in statewide totals.

TABLE 12

Students Tested, Fall 1988, by Year of High School Graduation

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
1988	31,262	65	14,804	51	7,579	82	5,223	91	507	91
1987	3,522	7	2,802	10	452	5	118	2	26	5
1986	1,857	4	1,483	5	230	3	70	1	7	1
Prior to 1986	9,518	20	8,223	28	777	8	268	5	10	2
Did Not Graduate	1,090	2	1,033	4	36	0	6	0	4	1
No Response	1,109	2	864	3	140	2	27	1	1	0
TOTAL TESTED	48,358		29,209		9,214		5,712		555	

*Students from the participating independent colleges are included in statewide totals.

TABLE 13

Students Tested, Fall 1988, by High School Program

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Academic	29,864	62	14,312	49	7,252	79	5,168	91	462	83
General	9,641	20	7,450	26	1,202	13	386	7	62	11
Career	5,841	12	4,949	17	447	5	92	2	23	4
GED	1,489	3	1,310	5	118	1	24	0	3	1
Other	629	1	542	2	49	1	15	0	3	1
No Response	894	2	646	2	146	2	27	1	2	0
TOTAL TESTED	48,358		29,209		9,214		5,712		555	

*Students from the participating independent colleges are included in statewide totals.

TABLE 14

Mathematics Courses Taken in High School, Fall 1988

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%**	#	%	#	%	#	%	#	%
General Math	22,325	46	16,678	57	2,813	31	1,333	23	137	25
Business Math	9,639	20	7,475	26	1,166	13	383	7	25	5
Algebra I	38,592	80	21,930	75	8,151	89	4,819	84	494	89
Algebra II	30,044	62	13,863	48	7,549	82	5,330	93	520	94
Geometry	34,228	71	17,157	59	8,062	88	5,425	95	529	95
Trigonometry	15,185	31	5,001	17	3,815	41	4,297	75	448	81
Senior Academic	4,999	10	1,465	5	1,320	14	1,469	26	152	27
Calculus	5,329	11	1079	4	1,207	13	2,375	42	255	46
No Response	945	2	702	2	138	2	31	1	0	0

*Students from the participating independent colleges are included in statewide totals.
**Percentages exceed 100 since students may take more than one math course in high school.

TABLE 15

Background Data (in percent) of Students Tested Statewide, 1978-1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SEX											
Male	46	45	45	44	44	45	44	44	44	44	43
Female	54	54	52	55	54	54	54	54	54	54	56
No Response	0	1	3	1	2	1	2	2	2	2	1
ENROLLMENT STATUS											
Full-Time	85	81	79	78	77	78	75	74	74	77	75
Part-Time	13	18	18	20	21	21	22	22	22	21	23
No Response	2	1	3	2	2	4	2	3	4	2	2
HIGH SCHOOL PROGRAM											
Academic	n/a	63	58	60	61	62	61	62	61	63	62
General	n/a	19	19	19	18	18	19	18	19	19	20
Career	n/a	15	14	14	14	14	13	13	12	11	12
GED	n/a	n/a	4	4	4	4	3	3	3	3	3
Other	n/a	2	4	1	1	1	1	1	1	1	1
No Response	n/a	n/a	2	2	2	2	3	3	4	2	2
HIGH SCHOOL RANK											
Highest Fifth	n/a	24	22	23	22	23	21	22	22	23	n/a
Second Fifth	n/a	24	23	23	23	23	22	22	22	22	n/a
Middle Fifth	n/a	38	39	39	40	40	40	39	38	39	n/a
Fourth Fifth	n/a	7	7	7	8	8	9	9	9	9	n/a
Lowest Fifth	n/a	2	2	2	2	2	2	2	2	3	n/a
No Response	n/a	5	7	6	5	4	6	5	7	4	n/a
ENGLISH BEST LANGUAGE											
Yes	n/a	n/a	n/a	n/a	n/a	92	91	88	90	92	92
No	n/a	n/a	n/a	n/a	n/a	5	5	5	5	5	5
No Response	n/a	n/a	n/a	n/a	n/a	3	4	7	5	3	3
OTHER LANGUAGE SPOKEN AT HOME											
Yes	n/a	n/a	n/a	n/a	n/a	15	15	16	15	16	17
No	n/a	n/a	n/a	n/a	n/a	84	82	79	81	82	81
No Response	n/a	n/a	n/a	n/a	n/a	1	2	5	4	2	2

TABLE 15A

Background Data (in percent) of Students Tested Statewide, 1978-1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
NO. OF YEARS OF HIGH SCHOOL ENGLISH											
One	2	2	2	2	2	2	2	2	2	2	n/a
Two	3	4	5	5	4	4	4	4	4	4	n/a
Three	7	8	8	8	6	6	6	5	6	6	n/a
Four	86	84	80	81	83	84	83	81	83	85	n/a
No Courses	n/a	n/a	n/a	n/a	n/a	1	1	1	1	1	n/a
No Response	n/a	n/a	n/a	n/a	n/a	3	4	7	5	3	n/a
NO. OF YEARS OF HIGH SCHOOL MATH											
One	6	6	6	5	5	4	4	3	3	3	n/a
Two	20	20	19	18	16	16	15	14	14	13	n/a
Three	34	33	31	30	30	29	29	28	29	30	n/a
Four	39	39	39	42	46	47	48	48	49	51	n/a
No Courses	n/a	n/a	n/a	n/a	n/a	1	1	1	1	1	n/a
No Response	n/a	n/a	n/a	n/a	n/a	2	3	7	5	2	n/a
MATH COURSES TAKEN IN HIGH SCHOOL[1]											
General Math	n/a	32	37	37	36	37	36	33	37	37	46
Business Math	n/a	17	17	18	17	17	16	16	17	17	20
Algebra 1	n/a	75	72	72	71	72	71	69	75	77	80
Algebra 2	n/a	55	52	53	55	56	56	56	59	63	62
Geometry	n/a	65	63	63	63	65	64	64	68	71	71
Trigonometry	n/a	25	23	24	26	27	27	28	30	33	31
Senior Academic	n/a	n/a	9	10	10	10	10	10	10	10	10
Calculus	n/a	7	7	7	8	9	9	10	10	11	11
No Response	n/a	n/a	n/a	n/a	n/a	2	3	6	5	2	2

[1]Percentages exceed 100 since students may take more than one math course in high school.

APPENDIX A

Description of the New Jersey College Basic Skills Placement Test

One purpose of the NJCBSPT is to help determine which students admitted to college need remedial instruction in certain basic skills; that is, the test was designed to discover which of the entering students do not have the level of skills generally expected of college freshmen and deemed necessary for successful completion of their academic programs. Thus, the basic skills measured by the test are defined not as the skills necessary to survive in the world (e.g., filling out applications, reading directions on medicine bottles, or the like) but as the skills needed to read college textbooks, to write papers for class, to solve mathematical problems, and, indeed, to succeed in a technological society.

The portions of the NJCBSPT dealing with verbal skills yield the following scores:

1. Reading Comprehension.
2. Sentence Sense.
3. Essay.
4. Composition, a composite score based on the Sentence Sense and Essay sections.
5. Total English score, a composite score based on the Reading Comprehension, Sentence Sense, and Essay sections.

A more detailed explanation of the test can be found in *Interpreting Scores on the New Jersey College Basic Skills Placement Test*. Similarly, further information concerning the writing sample and the mathematics sections of the test can be found in *Scoring the Essays* and *Interpreting Mathematics Scores on the New Jersey College Basic Skills Placement Test*, respectively. All booklets are available from the Department of Higher Education (see inside back cover).

Reading Comprehension (47 questions, including 7 pre-test questions, 50 minutes)

The Reading Comprehension section of the test measures students' ability to understand a written text, to extract the main idea from the text, and to draw appropriate inferences from it. Most, but not all, of the questions testing these skills are related to passages printed in the test book. The passages cover a variety of subjects and represent a variety of writing purposes and styles.

Students taking the test are expected to read the passages carefully, not merely skim them; they are expected to know what the text actually says, not merely what they think it might say. Close reading and attention to detail are expected, as is attention to tone. Students are expected to be able to generalize about the ideas in the passage and the method of their presentation. They are also expected to be able to identify ideas found in the passage when those ideas are stated in different words and to understand and identify the assumptions made by the author and the implications of the text.

For those NJCBSPT questions that are unrelated to passages, students are asked to identify the generalization that is supported by a group of statements or to identify the idea that best supports a given generalization.

Sentence Sense (40 questions, including 5 pre-test questions, 35 minutes)

The Sentence Sense section uses two kinds of multiple-choice questions. The first requires students to identify faults in sentences and make appropriate corrections. The second asks students to rewrite sentences, much as they would do when editing their own writing.

The problems presented to the student for correction are concerned mainly with the structure and logic of sentences, not with grammar or punctuation. Questions deal with expressing ideas clearly and accurately, appropriately coordinating or subordinating ideas within sentences, and recognizing complete sentences. The types of questions used ask students either to identify problems and correct errors in sentences or to recast sentences to change structure or emphasis - tasks they might perform when they themselves write.

Essay (20 minutes)

In evaluating writing samples, the faculty members who serve as scorers take into consideration every aspect of the writing, from subject-verb agreement to organization of ideas, from use of the comma to appropriateness of examples, from spelling to style. Each sample receives two independent scores on a six-point scale. The score reported for the essay is the sum of these two scores. Thus, the highest obtainable score is 12, and the lowest is two. For further information on scoring, refer to the NJCBSPT publication *Scoring the Essays* (see inside back cover).

Computation (35 questions, including 5 pre-test questions 40 minutes)

This section of the test measures the ability to perform basic arithmetic operations and to apply the operations to the solution of problems that involve fundamental arithmetic concepts. The questions cover operations with whole numbers, operations with fractions, operations with decimals and percents, and arithmetic reasoning.

Elementary Algebra (35 questions, including 5 pre-test questions, 40 minutes)

This section of the test measures the ability to perform basic algebraic operations and to apply the operations to the solution of problems that involve elementary algebraic concepts. It tests operations with real numbers, operations with algebraic expressions, and the ability to solve equations, inequalities, and word problems.

Changes in the Test

Since 1978, the NJCBSPT has undergone two significant revisions. For the first four years, a section on "Logical Relations" was included in the test. In 1982, this section was removed and several of the item types were imbedded into the Reading Comprehension and Sentence Structure (renamed Sentence Sense) sections.

In 1985, the Reading Comprehension section was shortened by 10 items in order to compensate for an observed "speededness" effect. For the NJCBSPT, a section is considered to be "speeded" if fewer than 90% of those sitting for the test complete it.

APPENDIX B

Participating Independent Colleges/Universities

Berkeley School

Caldwell College

Centenary College

Drew University

Fairleigh Dickinson University--
Rutherford, Madison & Teaneck Campuses

Felician College

Georgian Court College

Northeastern Bible College

Seton Hall University

Upsala College

Westminster Choir College

APPENDIX C

NJCBSPT Year to Year Score Equating

A raw score on a test is computed simply by adding the points awarded for each correct answer. The scores reported for the NJCBSPT are scaled scores. They are determined by applying a conversion formula to the raw scores. The reason for reporting scaled scores is that they can be made comparable across different years, since for each year a new form of the test is used.

Equating is the statistical process that makes it possible to report scaled scores that have essentially the same meaning for different forms of a test. Scores on each new form of the NJCBSPT are equated to scores on the previous form. These scores on the previous form are already "on scale." That is, the formula or table that converts raw scores to scaled scores on the previous form has already been defined. The equating process links each possible raw score on the new form to a scaled score on the previous form.

Simply put, the object of equating is to have the same scaled score on any form of the test represent the same level of the ability the test is measuring. A scaled score of "165," for example, would mean the same thing from one year to the next. However, this definition is not precise enough to serve as the basis for a statistical procedure. A more precise definition is the "equipercentile" definition. It states that a score on one form of the test is equated to a score on another form in a group of students if the two scores have the same percentile rank in that group of students. For example, suppose that in a group of students the 34th percentile on Form A of a test is a raw score of 12; that is, 34 percent of the students scored below 12 on Form A. And suppose that in this same group of students, the 34th percentile on Form B is a raw score of 13; that is, 34 percent of the same group of students scored below 13 on Form B. Then in this group of students a raw score of 13 on Form B would equate to a raw score of 12 on Form A, and these two raw scores would correspond to the same scaled score. This definition forms the basis for the equating of NJCBSPT scores. Methods based on other, simpler definitions are often used, but only when their results are consistent with the results of methods based on the equipercentile definition.

For the NJCBSPT, there is no group of students taking the new form and the previous form under the same conditions (i.e., at approximately the same time, with no instruction in between). The information that links the new form with the previous form is provided by "common items"--questions repeated from the previous form of the test. The equating methods used for the NJCBSPT assume that students with the same score on the common items would do equally well or poorly on the non-common items of the test. If a group of students performs better on equating items (ca. 40% of the test) than the group who took the test the previous year, this would indicate an improvement in basic skills level.

For example, suppose we focus our attention on the students who took last year's form and answered exactly 10 of the common items correctly. Suppose their average raw score on the full test (last year's form) was 19. Then we would assume that this year's students who answered 10 of the common items correctly would also have had an average raw score of 19 on last year's form, if they had taken it.

This assumption makes it possible to estimate the scores that this year's students would have earned on last year's form and also the scores that last year's students would have earned on this year's form of the test. Therefore, it is possible to estimate the percentiles on either form in the combined group of this year's students and last year's students. The equating is based on the estimated percentiles (or other score statistics) in this combined group.

Some of the equating methods used for the NJCBSPT automatically produce a "linear" equating formula--one that can be represented on a graph by a single straight line. Methods based on the equipercentile definition of equating produce a table linking each score on the new form to a score on the old form, but this table cannot be precisely represented by a simple formula. However, the statisticians who equate the NJCBSPT now approximate this table by a series of linear equating formulas--different formulas in different portions of the score range.

ETS performs score equating on the basis of the test results received by June and again on the basis of the cumulative results received through October. Each of these equatings includes the application of at least three statistical models: two linear models

and one curvilinear model. A second curvilinear model is used if there is evidence of curvilinearity in the equating results. The standard ETS equating software includes linear models based on the work of Tucker and Levine (see reference below). When there is little evidence of curvilinearity, the Tucker method is preferred if the old and new form samples of students are quite similar in anchor test means and variance, while the Levine method is preferred if the samples of students differ substantially in anchor test means or variances. When old and new test forms differ in length, as did the Reading Comprehension test between the forms in 1984 and 1985, the Levine method for tests of unequal reliabilities is used in place of the Levine method for test of equal reliabilities. The standard ETS method includes a curvilinear model based on an equipercentile equating of the new form to the old form by equating each to the anchor test of common items. A second curvilinear equating method is equipercentile equating, based on frequency estimation. The above equating models are described in Angoff's chapter of *Educational Measurement* (edited by R. L. Thorndike, American Council on Education, 1971). The equating procedures are performed with a package of standard ETS equating computer programs. The programs have been successfully used in ETS testing programs (including the NJCBSPT) for many years. ETS measurement statisticians review the results of all equating models applied and choose the raw-to-scale score conversion that best reflects the differences in test difficulty indicated by the equating results.

Each year, after the June scoring cycle, ETS issues to the colleges the "final form" of the raw to scaled score conversion table that links the NJCBSPT scaled scores from year to year.

NJCBSPT Mean Scaled Scores
Statewide
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Number of Students Tested	42,984	47,725	47,951	49,833	51,135	51,321	46,465	44,344	44,284	42,603	48,358
MEAN SCALED SCORES:											
Reading Comprehension	165	165	164	163	163	163	161	161	161	161	161
(Standard Deviation)	(11.5)	(12.1)	(12.2)	(12.7)	(12.7)	(12.9)	(13.2)	(13.0)	(13.2)	(13.4)	(13.3)
Sentence Structure/Sense	164	165	164	164	165	165	164	164	164	164	164
(Standard Deviation)	(11.3)	(11.6)	(11.6)	(11.9)	(11.5)	(11.5)	(11.6)	(11.6)	(11.6)	(11.8)	(11.6)
Essay	7.1*	7.0*	7.2	6.7	6.9	6.5	7.0	7.1	7.0	6.9	7.1
(Standard Deviation)	(n/a)	(n/a)	(2.1)	(2.0)	(2.0)	(2.1)	(2.0)	(1.9)	(1.9)	(2.0)	(1.8)
Composition[1]	164	165	165	164	165	165	165	165	165	165	165
(Standard Deviation)	(11.3)	(11.5)	(11.3)	(11.5)	(10.9)	(10.7)	(10.9)	(11.1)	(11.2)	(11.4)	(11.0)
Total English[2]	164	165	165	164	164	164	163	163	164	163	163
(Standard Deviation)	(11.5)	(11.8)	(11.6)	(11.9)	(11.6)	(11.5)	(11.5)	(11.6)	(11.8)	(11.8)	(11.6)
Math Computation	164	165	164	164	165	165	165	165	165	166	165
(Standard Deviation)	(11.3)	(11.3)	(11.1)	(11.0)	(10.7)	(10.5)	(10.5)	(10.5)	(10.5)	(10.5)	(10.5)
Elementary Algebra	166	166	165	166	166	167	167	167	167	168	166
(Standard Deviation)	(11.0)	(12.1)	(12.2)	(12.4)	(11.7)	(11.8)	(11.6)	(11.7)	(11.9)	(11.8)	(12.3)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, the following approximate comparisons are appropriate:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.
[2]Total English is a composite score based on all three reading and writing sections.

APPENDIX D
2 of 6

NJCBSPT Mean Scaled Scores
County Colleges
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Number of Students Tested	23,390	27,230	28,464	30,073	30,380	30,677	28,191	26,288	26,322	24,117	29,209
MEAN SCALED SCORES:											
Reading Comprehension	162	161	161	161	160	159	158	158	158	157	158
(Standard Deviation)	(12.3)	(13.0)	(12.9)	(13.3)	(13.3)	(13.4)	(13.4)	(13.1)	(13.5)	(13.5)	(13.4)
Sentence Structure/Sense	161	161	161	161	162	162	161	161	161	161	161
(Standard Deviation)	(11.7)	(12.0)	(12.1)	(12.3)	(11.9)	(12.0)	(11.9)	(11.8)	(11.9)	(12.1)	(11.7)
Essay	6.7*	6.6*	6.7	6.2	6.5	6.0	6.6	6.7	6.6	6.4	6.7
(Standard Deviation)	(n/a)	(n/a)	(2.1)	(2.0)	(2.0)	(2.1)	(2.0)	(1.9)	(1.9)	(2.0)	(1.8)
Composition[1]	161	161	162	161	162	162	162	162	162	161	162
(Standard Deviation)	(11.8)	(12.0)	(11.7)	(11.8)	(11.2)	(10.8)	(11.0)	(11.2)	(11.3)	(11.3)	(11.0)
Total English[2]	161	161	161	161	161	161	160	160	160	160	160
(Standard Deviation)	(12.0)	(12.4)	(12.1)	(12.3)	(12.0)	(11.6)	(11.5)	(11.5)	(11.7)	(11.6)	(11.4)
Math Computation	160	161	161	161	162	162	162	162	162	162	162
(Standard Deviation)	(11.5)	(11.3)	(11.1)	(11.0)	(10.6)	(10.1)	(10.1)	(10.2)	(10.1)	(10.1)	(9.9)
Elementary Algebra	161	161	161	161	162	162	162	162	162	163	161
(Standard Deviation)	(9.6)	(10.4)	(10.4)	(10.6)	(10.2)	(9.9)	(9.7)	(9.8)	(9.8)	(9.8)	(10.0)

---

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, the following approximate comparisons are appropriate:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.
[2]Total English is a composite score based on all three reading and writing sections.

APPENDIX D
3 of 6

NJCBSPT Mean Scaled Scores
State Colleges
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Number of Students Tested	10,840	11,487	10,669	10,338	11,328	10,981	9,767	9,237	8,817	9,369	9,214
MEAN SCALED SCORES:											
Reading Comprehension	166	166	166	165	165	166	164	163	164	164	164
(Standard Deviation)	(10.2)	(10.2)	(10.3)	(11.1)	(11.3)	(11.0)	(11.6)	(11.7)	(11.8)	(11.9)	(11.7)
Sentence Structure/Sense	166	167	167	167	167	168	167	167	167	168	168
(Standard Deviation)	(10.0)	(9.8)	(9.7)	(10.0)	(9.9)	(9.8)	(10.0)	(10.2)	(9.9)	(9.8)	(10.1)
Essay	7.4*	7.3*	7.5	7.2	7.3	7.0	7.4	7.4	7.4	7.3	7.4
(Standard Deviation)	(n/a)	(n/a)	(1.8)	(1.8)	(1.8)	(1.9)	(1.8)	(1.7)	(1.7)	(1.8)	(1.6)
Composition[1]	166	167	168	167	167	168	168	167	167	168	168
(Standard Deviation)	(10.1)	(9.7)	(9.5)	(9.6)	(9.5)	(9.2)	(9.4)	(9.7)	(9.6)	(9.8)	(9.6)
Total English[2]	166	167	167	167	167	167	167	166	166	166	167
(Standard Deviation)	(10.2)	(9.8)	(9.7)	(10.0)	(10.0)	(9.7)	(9.9)	(10.1)	(10.2)	(10.2)	(10.1)
Math Computation	166	166	167	167	167	168	167	168	168	168	169
(Standard Deviation)	(9.8)	(9.8)	(9.5)	(9.6)	(9.4)	(9.2)	(9.3)	(9.2)	(9.3)	(9.1)	(9.1)
Elementary Algebra	167	167	167	168	168	169	169	169	169	170	171
(Standard Deviation)	(10.0)	(11.0)	(11.1)	(11.2)	(10.7)	(10.8)	(10.5)	(10.3)	(10.7)	(10.7)	(11.0)

---

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, the following approximate comparisons are appropriate:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.
[2]Total English is a composite score based on all three reading and writing sections.

78

78

APPENDIX D
4 of 6

NJCBSPT Mean Scaled Scores
Rutgers
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Number of Students Tested	7,322	7,700	6,237	6,559	6,219	6,251	5,856	6,550	6,753	5,573	5,712
MEAN SCALED SCORES:											
Reading Comprehension	170	170	170	170	170	171	170	170	170	170	171
(Standard Deviation)	(8.2)	(8.4)	(8.5)	(8.7)	(8.5)	(8.0)	(8.6)	(8.6)	(8.7)	(8.8)	(8.2)
Sentence Structure/Sense	170	171	171	171	171	172	173	172	172	173	173
(Standard Deviation)	(8.5)	(8.4)	(8.0)	(8.3)	(8.6)	(7.1)	(7.1)	(7.2)	(7.3)	(7.3)	(7.0)
Essay	8.2*	8.2*	8.3	7.9	7.8	7.9	8.2	8.2	8.2	8.2	8.2
(Standard Deviation)	(n/a)	(n/a)	(1.7)	(1.7)	(1.6)	(1.7)	(1.6)	(1.5)	(1.5)	(1.8)	(1.5)
Composition[1]	171	171	172	172	171	173	173	173	173	173	173
(Standard Deviation)	(8.1)	(8.4)	(7.9)	(8.2)	(7.6)	(7.3)	(7.3)	(7.7)	(7.7)	(8.1)	(7.5)
Total English[2]	171	171	172	172	171	173	172	172	173	173	173
(Standard Deviation)	(8.1)	(8.4)	(8.0)	(8.3)	(7.7)	(7.4)	(7.6)	(8.0)	(8.0)	(8.3)	(7.8)
Math Computation	171	172	172	172	173	174	174	174	174	175	175
(Standard Deviation)	(8.1)	(8.3)	(7.7)	(7.8)	(7.3)	(6.8)	(6.8)	(6.7)	(7.0)	(6.9)	(6.6)
Elementary Algebra	174	175	177	177	177	179	179	179	179	180	180
(Standard Deviation)	(10.1)	(10.8)	(10.8)	(10.9)	(9.7)	(9.6)	(9.3)	(9.6)	(9.4)	(9.4)	(9.2)

---

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, the following approximate comparisons are appropriate:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.
[2]Total English is a composite score based on all three reading and writing sections

NJCBSPT Mean Scaled Scores
NJIT
1978 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1987	1988
Number of Students Tested	690	650	687	679	722	599	541	497	472	489	555
MEAN SCALED SCORES:											
Reading Comprehension	169	170	170	169	168	169	162	165	167	165	166
(Standard Deviation)	(8.6)	(8.8)	(8.7)	(10.1)	(10.2)	(10.2)	(11.5)	(12.0)	(10.4)	(11.6)	(11.3)
Sentence Structure/Sense	169	170	170	169	170	170	169	168	169	168	169
(Standard Deviation)	(8.8)	(8.4)	(8.3)	(9.0)	(9.0)	(8.9)	(9.5)	(10.4)	(9.5)	(10.9)	(9.3)
Essay	7.4*	7.4*	7.6	7.2	7.2	7.0	7.5	7.1	7.2	7.2	7.2
(Standard Deviation)	(n/a)	(n/a)	(1.8)	(1.7)	(1.7)	(1.9)	(1.9)	(1.8)	(1.6)	(1.9)	(1.7)
Composition[1]	168	169	170	169	168	169	169	167	168	167	168
(Standard Deviation)	(8.8)	(8.6)	(8.0)	(9.0)	(8.8)	(8.8)	(9.6)	(10.2)	(9.2)	(10.7)	(9.6)
Total English[2]	169	170	170	169	168	169	168	166	168	167	167
(Standard Deviation)	(8.7)	(8.6)	(8.1)	(9.3)	(9.2)	(9.2)	(10.3)	(10.7)	(9.7)	(10.9)	(10.1)
Math Computation	174	175	176	175	175	176	175	175	176	175	176
(Standard Deviation)	(4.9)	(4.9)	(4.2)	(5.0)	(5.1)	(5.1)	(6.1)	(5.7)	(5.8)	(6.7)	(5.4)
Elementary Algebra	179	181	182	182	182	183	181	182	183	181	182
(Standard Deviation)	(6.6)	(6.2)	(6.8)	(6.8)	(6.6)	(6.5)	(7.7)	(7.3)	(6.7)	(8.2)	(7.3)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, the following approximate comparisons are appropriate:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.
[2]Total English is a composite score based on all three reading and writing sections.

NJCBSPT Mean Scaled Scores
Statewide Comparison of Recent High School Graduates*
1978 - 1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Number of Recent High School Graduates	28,846	29,943	29,355	30,540	31,964	32,236	28,466	27,291	27,447	28,169	30,883
Percent of Total Test Takers	67%	63%	61%	61%	63%	63%	61%	62%	63%	66%	64%
TOTAL ENGLISH											
Number Completing Test	28,800	29,850	29,255	30,488	31,621	31,538	28,401	27,262	27,156	27,805	30,856
Not Attempted	46	93	100	52	46	192	65	29	291	83	27
Mean Score	165	166	166	165	165	166	165	165	165	165	165
Standard Deviation	10.4	10.6	10.5	10.8	10.3	10.2	10.5	10.5	10.7	10.8	10.7
MATH COMPUTATION											
Number Completing Test	28,758	29,788	29,222	30,415	31,856	31,661	28,438	27,274	27,406	27,844	30,859
Not Attempted	88	155	133	125	108	69	28	17	41	44	24
Mean Score	166	166	166	166	166	167	167	167	167	168	167
Standard Deviation	10.4	10.3	10.1	10.1	9.9	9.6	9.8	9.7	9.8	9.7	9.7
ELEMENTARY ALGEBRA											
Number Completing Test	27,831	28,223	27,496	28,499	29,754	29,995	27,134	25,742	26,055	26,902	30,121
Not Attempted	1,015	1,720	1,859	2,041	2,210	1,735	1,332	1,549	1,392	986	762
Mean Score	167	168	168	168	169	169	169	169	170	170	170
Standard Deviation	10.8	11.8	11.9	12.1	11.4	11.5	11.3	11.4	11.6	11.5	11.8

*For each year, the most recent high school graduates are those who graduated the spring prior to their enrollment in college.

APPENDIX E

A Description of the Proficiency Levels Established by the Basic Skills Council as a Guide for College Placement Procedures

Based upon its understanding of the content and difficulty level of the test, and upon the recommendations of its advisory committees, the Council offers the following general propositions to assist in understanding the test results presented in this report.

Verbal Skills

For the purpose of this report, students who scored below 161 on Total English* were placed in the "Lack Proficiency" category. Those who fell in the 161-172 range on Total English were placed in the "Appear to be Proficient in Some Areas" category while those students above 172 on Total English "Appear to be Proficient." A more precise understanding of an individual student's scores can be achieved by considering the following.

In the Council's judgment, all students with essay scores of 2, 3 or 4, and those students with an essay score of 5 or 6 but fewer than 80 percent correct on either of the two multiple-choice tests, are seriously deficient in their use of written language. An essay score of 2, 3, or 4 indicates pronounced weakness in writing: in these essays the message is not always clear, the idea is either not developed or not logical, and the conventions of written language are usually not observed. An essay score of 5 or 6, together with fewer than 80 percent correct on one or both of the multiple-choice tests, indicates a need for help in following the conventions of written language, and in developing and comprehending an idea in a coherent manner.

Many students exhibit a pattern of performance that must be reviewed more carefully, since they probably require some assistance in one or more areas according to the requirements and standards of the individual colleges. Students in this category

---

**Total English is a composite score based on all three reading and writing sections.*

either did not demonstrate proficiency in one or more areas, or their essay and multiple choice scores may have exhibited a discrepancy. For example, a high essay score and a low Sentence Sense score is a pattern that bears examination. Essay scores of 5, 6 or 7 together with multiple-choice scores above 80 percent correct are "average" in that the essays tend to lack depth and coherence and, despite the multiple-choice scores, the writing samples may exhibit flaws in structure and/or language conventions. An essay score of 7 combined with scores of less than 80 percent correct on one or both of the multiple-choice tests indicates at best a marginal performance. An essay score of 8-12 combined with fewer than 80 percent correct on any one of the multiple-choice tests is a discrepant pattern, since the essay score indicates a range from above average to excellent, and the multiple-choice scores appear to contradict the essay score.

Students with essay scores of 8-12 *and* 80 percent correct on both multiple-choice tests seem to be proficient in the basic skills of reading and writing. The writers of these essays have control of both the language and the structures they are using; generally speaking, they can comprehend a relatively mature idea and develop it in standard English.

Computation

A scaled score of 164 or below (18 or fewer questions correct out of 30 on the 1988 test) indicates pronounced weaknesses in dealing with certain computational operations and, in particular, with problems involving percentages and decimals. Declining scores indicate progressively greater difficulty with operations involving fractions. Students scoring below 165 on the computation test are included in the category: "Lack Proficiency."

The range of scaled scores from 165 to 172 (19 to 24 questions correct) indicates greater familiarity with elementary computation but still shows definite weaknesses. The particular weaknesses of a student can be identified only by examining individual item responses. Students falling in the range of 165 to 172 on the computation test fall in the category: "Appear to be Proficient in Some Areas."

Students who achieve a scaled score of at least 174 (25 questions correct) seem to be proficient in the elementary computational skills measured by this test and fall in the "Appear to be Proficient" category.

Elementary Algebra

Students who achieve a scaled score of 166 or below (13 or fewer questions correct out of 30 on the 1988 test) lack any understanding of elementary algebra. Such students may possess a smattering of knowledge but have difficulty with a wide variety of elementary operations, and are not able in general to perform sustained operations involving a succession of simple steps. Students in this category ("Lack Proficiency") probably need to restudy elementary algebra from the beginning.

The particular difficulties of students who score in the scale range from 167 to 182 (14 to 24 questions correct) vary. They have some misconceptions, have some trouble dealing with equations involving letters rather than numbers, and probably cannot handle sustained operations well. The type of assistance or course work such students may require will depend on each student's background and can be determined by careful examination of the particular patterns of item responses. Students scoring in the range of 167 to 182 on elementary algebra are included in the "Appear to be Proficient in Some Areas" category.

Students who achieve a scaled score of 183 and above (25 or more questions correct) seem to have no widespread weaknesses in performing elementary algebraic operations and fall in the "Appear to be Proficient" category. They probably can do simple, sustained operations. The test, however, does not extend far enough in difficulty level to determine whether students scoring in this highest range are able to complete a more complex succession of simple operations.

ADDITIONAL NJCBSPT PUBLICATIONS AND RELATED REPORTS*

FUTURES: Making High School Count. New Jersey Basic Skills Council, 1987.

Student Information Bulletin 1989.

Interpreting Scores on the New Jersey College Basic Skills Placement Test.

Interpreting Mathematics Scores on the New Jersey College Basic Skills Placement Test.

Scoring the Essays.

Teaching Reading & Writing. Observations derived from results of the New Jersey College Basic Skills Placement Test. New Jersey Basic Skills Council, 1984.

Report on the Character of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1984. New Jersey Basic Skills Council, 1985.

Report on the Effectiveness of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1983 - Spring 1985. New Jersey Basic Skills Council, 1986.

Report on the Effectiveness of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1984 - Spring 1986. New Jersey Basic Skills Council, in press.

---

*Publications and reports are available from the Basic Skills Assessment Program, New Jersey Department of Higher Education, 20 West State Street, CN 542, Trenton, NJ 08625.

STATE OF NEW JERSEY
DEPARTMENT OF HIGHER EDUCATION
CN 542
TRENTON, NEW JERSEY 08625

OFFICE OF THE CHANCELLOR

MEMORANDUM

TO: Members, Board of Higher Education

FROM: T. Edward Hollander, Chancellor

SUBJECT: Basic Skills Council Report on Fall 1988 Test Results

DATE: February 8, 1989

I am submitting to you the annual report from the Basic Skills Council on the results of the New Jersey College Basic Skills Placement Test (NJCBSPT) for freshmen entering the state's public colleges and universities in the fall of 1988. This is the eleventh annual report on the test results of the basic skills testing program instituted by the Board in 1977; accordingly the Council has, in this report, also provided the Board with an eleven-year retrospective look at the placement test results. While we have come to realize that year-to-year changes in a large-scale testing effort such as this are very small, the eleven-year view has revealed small but positive upward trends. Since the first year of the testing should be regarded as "start-up," I will limit my comments to a ten year view (i.e., 1979-88).

The data in the report indicate that while small parts of the extended view may be positive, significant proportions of the students continue to enter our colleges needing help in basic skills. In the aggregate, both recent high school graduates who come to our colleges and non-recent graduates are severely deficient in the basic skills of reading, writing, computation and elementary algebra. Consequently, the large investment in remediation in our public colleges must continue. To bring these students up to beginning college standards, all sectors of public higher education continue to maintain needed remedial programs.

The Test Results

The Basic Skills Council reports the results of the testing in terms of three categories of proficiency in the basic skills: "lacking proficiency," "appear proficient in some areas" and "appear proficient." This year 48,358 students were tested at the 30 public and 11 participating independent colleges and universities. This figure represents a nine percent increase over the number tested in the same period last year. The increase comes both from a larger freshmen class and greater efforts by the colleges at ensuring the testing of part-time students.

By the Basic Skills Council's criteria, the statewide pattern of skills proficiencies among the entering freshmen was as follows:

Statewide

	Verbal Skills %	Computation %	Elementary Algebra %
Appear Proficient	26	30	15
Appear Proficient in Some Areas	41	23	26
Lack Proficiency	33	47	59

In addition, the Council has provided the Board with several sub-group analyses in their report. The recent (1988) high school graduates' results are reported separately and continue to show a slightly better profile than the non-recent high school graduates, as in previous years. The statewide proficiencies among the recent high school graduates tested were as follows:

Recent High School Graduates

	Verbal Skills %	Computation %	Elementary Algebra %
Appear Proficient	29	39	21
Appear Proficient in Some Areas	43	24	33
Lack Proficiency	28	39	46

As the Council points out, the proportion of students who are well prepared to begin college work in New Jersey continues to be well below what we would hope to see. The colleges have worked to address the problem by developing more effective programs designed to upgrade the skills of underprepared students. The Basic Skills Council continues to monitor the effectiveness of the college remedial programs which receive so many of the students who have taken the NJCBSPT. At next month's Board meeting the Council will present a new and comprehensive review of the outcomes of a two-year cohort of remedial students at our institutions.

The Ten-Year Trends

By reviewing the results back to the beginning of the placement testing program in 1979, we note several small, but nonetheless positive, trends in the proficiency data. (See Attachment A for the data summary.) These data include:

- A small statewide improvement in the proportion of students who "appear proficient" in elementary algebra. This group has slowly increased from around 10% in 1979 to 15% today.

Within the sectors, the following ten-year trends were noted:

- At the state colleges, the proportion of students in the "appear proficient" category for both computation and elementary algebra has improved by 7 to 10 percentage points. The proportion of students in the "lack proficiency" category has decreased by 6 to 11 percentage points.

- At Rutgers, gradual improvements were noted in all three skill areas, with the "appear proficient" category expanding by as much as 21 percentage points, while the "lack proficiency" categories declined by as much as 9 percentage points.

- At NJIT, the "appear proficient" category in elementary algebra increased by 16 to 20 percentage points.

For the recent high school graduates:

- An increase in the proportion of students who "appear proficient" in elementary algebra (to 21%).

High School Homework: A Factor in Proficiency

While it may seem self-evident that the longer (and harder) students work, the more likely that they will be proficient in basic skills, the parameters of this apparent truism are worth study in themselves. In a new question on this year's answer form, the Council asked students to categorize the amount of time they spent per week in high school doing homework requiring reading, writing and mathematics. In all three disciplines, the typical response from students was one to three hours per week. In contrast, the students admitted to Rutgers and NJIT reported spending on average several more homework hours per week. The Council also compared our New Jersey recent high school graduates to the seventeen-year-olds (not all of whom were college-bound) in the 1988 Mathematics Report of the National Assessment of Educational Progress. Our college-admitted students reported doing more math homework than the seventeen-year-olds in the nationwide sample.

The amount of time students spend on homework was found to have a positive relationship to the test results. Students who spent four or more hours per week on homework were much more likely to score above the Council's "lack proficiency"

category than were students who spent an hour or less per week on homework in each discipline. While homework time is certainly not the only factor related to adequate academic preparation, it is one of the necessary conditions.

Coordinated Initiatives Toward Improvement

Our colleges' missions vary greatly, as do the profiles of the students they admit. The data in the present report clearly indicate, for example, that Rutgers' students have far less remedial need than those attending most county colleges. Even Rutgers, however, has significant numbers of students in need of remedial work.

The majority of our test takers are recent high school graduates (64%) and this is the group in which improvement is most likely to be seen in future years. The Council's report indicated, in fact, that the greatest upward trend observed was an increase in the proportions of recent graduates who "appeared proficient." There were, however, only small decreases in the "remedial" categories. In other words, we are enrolling more of the better prepared students but we continue to enroll roughly the same proportion of students who need remedial work. We must continue to strive to bring up the level of the whole admitted cohort by carrying to the schools the message of what proficiencies colleges expect, and by working toward more coordinated initiatives for reducing the need to upgrade underprepared college students.

The dilemma of inadequate basic skills preparation is in fact one that affects more than the freshmen year of college. New Jersey is a high technology state whose future economic success is closely related to the educational level of its citizens. According to the U.S. Bureau of Labor Statistics, in just five years, 75% of all jobs will require some preparation beyond high school, and 20% will require a minimum of a baccalaureate degree. We know that for New Jersey the fastest growing occupations in the state are those that require even higher levels of skills.

Greater proportions of New Jersey public high school students are continuing their education. The percentage of high school graduates going on to college has grown from 61% to over 68% in the past ten years. The challenge for the educational system is to prepare all of these high school students for college-level study. In fact, the level of skills expectation needed for a student to reach the Basic Skills Council's "appear proficient in some areas" category is no more than one would expect from any educated citizen.

Under Commissioner Saul Cooperman's leadership our schools are moving in the right direction. The school monitoring process has been tightened and more compensatory education funding has been provided for basic skills instruction. More is needed, and two recent statewide initiatives hold promise for upgrading the level of the cohort of graduates who will come to college in the nineties.

The first is the recent (12/1/88) legislation upgrading the existing ninth grade High School Proficiency Test to the eleventh grade. Higher minimum standards will be set for a New Jersey high school diploma and the new eleventh grade test will require higher-level thinking from the students. College faculty are active members of the test

development committees. I believe the upgraded test requirement, along with the curriculum changes it will stimulate, will eventually result in improved reading, writing and mathematics levels for our incoming freshmen. The first eleventh grade students who are subject to the new requirement will be tested in 1993 and will enter our colleges in the fall of 1995.

The second positive initiative is the effort to define common proficiencies for the core high school courses across the state. Once completed, this effort will specify the topics to be covered in typical courses. It would ensure, for example, that a course called "Algebra I" would address a uniform set of topics in every district. Our test results certainly indicate that students have not mastered many topics in elementary algebra. National and international studies have repeatedly confirmed these discouraging outcomes. Curriculum standardization (and testing standards within courses) will be one welcome step toward raising student performance. We commend Commissioner Cooperman for all these initiatives.

We in higher education are also doing more to stimulate improvement. Within the basic skills testing program we have strengthened our information flow to the schools by providing (this spring) an item by item analysis of these test results to principals; by sharing this test report with school board chairs and the School Boards Association; by discussing implications with teachers at the NJEA convention; and by preparing new materials for parents of middle school level children. Further, we will this spring publish a school by school analysis of these test results as we promised last year.

The wider college community also has undertaken work with primary and secondary schools. We have made this one of our five year goals in the policy paper, "Improving Undergraduate Education" which you approved last fall. We have created an Office of College-School Collaboration which has already stimulated a wide variety of partnerships with school systems, especially in mathematics and science where our state and national test results have been weakest. I have included here (Attachment B) a set of abstracts of the projects that are currently underway with the schools. Many more exist at the independent initiative of our colleges.

Higher education is both a recipient of the students in the educational "pipeline" and a concerned partner with the schools. However, we can and must do more. New projects in the formative stages include "Lang" type programs (in which corporate benefactors not only guarantee college tuition for young students from disadvantaged areas but also help provide needed counseling and tutoring) and "academic alliances" between school and college faculty teaching common subject areas. We are doing more and will continue to increase our efforts. I believe that though we currently continue to struggle with the size of the remedial need at the colleges, the signs are positive for gradual improvement through the nineties.

Attachments

ATTACHMENT A

Table Summary of Ten Year Trends In Basic Skills Proficiencies

	1979	1988	Percentage Point Change
STATEWIDE			
Elementary Algebra			
"Appear Proficient"	11%	15%	+4%
STATE COLLEGES			
Computation			
"Appear Proficient"	33%	41%	+7%
"Lack Proficiency"	37%	31%	-6%
Elementary Algebra			
"Appear Proficient"	10%	20%	+10%
"Lack Proficiency"	51%	40%	-11%
RUTGERS			
Verbal Skills			
"Appear Proficient"	48%	64%	+16%
"Lack Proficiency"	13%	6%	-7%
Computation			
"Appear Proficient"	63%	74%	+11%
"Lack Proficiency"	16%	9%	-7%
Elementary Algebra			
"Appear Proficient"	36%	57%	+21%
"Lack Proficiency"	21%	12%	-9%
NJIT			
Elementary Algebra			
"Appear Proficient"	54%	60%	+6%
RECENT HIGH SCHOOL GRADUATES			
Elementary Algebra			
"Appear Proficient"	15%	21%	+6%

ATTACHMENT B

Office of College-School Collaboration
Pre-College Academic Programs

PROJECT ADELANTE, *Kean College of New Jersey*: Serves eighty "Limited English Proficient" (LEP) Hispanic 6th, 7th and 8th graders from the Perth Amboy school district. The program consists of a five week summer academy at Kean College followed by a Saturday academy during the school year in Perth Amboy. The program consists of English language development workshops, math/science/computer literacy skills development sessions, music/art/physical education activities, parental involvement activities, career counseling workshop, and field trips. Perth Amboy teachers and counselors along with Kean College faculty serve as instructors for the program.

CREATING HIGHER ASPIRATIONS AND MOTIVATION PROGRAM (C.H.A.M.P.), *Glassboro State College*: Serves sixty 8th, 9th, 10th, 11th and 12th graders from Camden schools: Camden High and Woodrow Wilson. The major components of the program are a six week summer program, a full year academic program including SAT classes, a tutorial, mentoring and trips to colleges and universities in New Jersey. Support services include individual and group counseling, mentoring by college students from Camden, tutorials, career and financial aid orientation, and other activities designed to insure success in high school.

LOGO FOR MATHEMATICS STUDENTS AND TEACHERS (LOGO-CAMP), *Rutgers University - Camden*: Serves forty-eight rising 8th graders from East Camden Middle School. In July, these students attend classes for the LOGO-CAMP experience at the Rutgers - Camden campus. The students learn the LOGO computer language enabling them to write programs which construct geometric designs. The course is team-taught by college faculty and middle school mathematics teachers, and provides both lectures, discussions and hands-on experience. During the academic year, the students continue their LOGO instruction as part of their mathematics curriculum at East Camden Middle School.

CONSORTIUM FOR STATE PRE-COLLEGE PROGRAMS, *William Paterson College*: Serves sixty students from the city of Paterson entering 10th, 11th or 12th grade from Eastside, Kennedy and Rosa Parks High Schools. The major components of the program are a four week summer program of intensive study and three 2-day enrichment sessions during the school year. The program uses both college and high school faculty to teach the curriculum which stresses mathematical projects with sustained algebraic computations, computer science, biology, chemistry, reading and oral skills, and introductory SAT work. Academic guidance sessions are provided using college and high school staff.

COLLEGE AWARENESS, *Union County College*: Serves eighty 9th and 10th graders from the Elizabeth and Plainfield school systems. The program has a six week summer commuter program that provides instruction in both science and Astronomy. The science program, "Turning Kids on to Science" is taught to forty students -- twenty each from the Elizabeth and Plainfield school systems. The Astronomy program is taught to the remaining forty students. During the school year, the faculties of Union County College, Elizabeth High School and Plainfield High School motivate the 9th, 10th, and 11th graders to learn more about the college admissions process through lecture discussions and video tape presentations.

THE BOOST PROGRAM, *University of Medicine and Dentistry of New Jersey - School of Osteopathic Medicine*: Serves seventy-five pre-10th and pre-11th grade students from Camden schools: Camden, Camden Catholic and Woodrow Wilson High Schools. The major components of the program are a six week summer session, an academic year tutorial and mentoring by minority undergraduate students, and periodic trips to science related institutions. The summer session is held at Glassboro State College. The Program uses faculty from the participating higher education and secondary institutions. Curriculum topics include biology (comparative physiology and sports medicine), chemistry (environmental science), and preparation for the PSAT/NMSQT (mathematics and verbal.) Students visit the Pinelands Institute for Environmental Studies at Glassboro State College, a sports medicine clinic and university faculty visit the high school to speak with students about health care careers.

DISCOVERY '88 - A PRECOLLEGE ENRICHMENT AND APPRENTICESHIP PROGRAM IN SCIENCE AND TECHNOLOGY. *Cook College, Rutgers University*: Serves fifty high school students from New Brunswick and its surrounding urban districts. *Discovery '88* is a precollege academic enrichment apprenticeship program designed to attract junior/senior high school minority and disadvantaged students to careers in science and technology. The program is a comprehensive, residential five week summer program with a one-day academic year follow-up workshop. Future plans include an academic year component for the Discovery '88 participants and the potential Discovery '89 candidates (sophomores and juniors) from New Brunswick High School. Apprenticeships are conducted in animal science, food science, horticulture, forestry, nutrition, meteorology, plant pathology, soils and crops, etc. The classroom instruction component includes mathematics/English, computers, scientific methods and several "skills" and informational seminars such as study skills, leadership and careers, and field trips.

COLLEGE INCENTIVE/CAREER EXPLORATION PROGRAM - PROJECT AWARENESS, CAREER BEGINNINGS, PASS PLAN III AND THE URBAN EDUCATION CONSORTIUM, *Passaic County Community College*: The *Project Awareness* program serves two hundred forty 7th and 8th graders from Paterson schools who are 6 months to a year below grade level in math, science and/or reading. Program activities include career awareness and skill building in math, language, science and computers. Activities are conducted on the PCCC campus during a five week summer program with the residential component at William Paterson College and on alternate Saturdays during the school year.

The *Career Beginnings* program serves two hundred 11th and 12th graders from the Paterson high schools. The program encourages students to graduate from high school, attend college, increase awareness of career options, and improve self-image through a six week summer work/learning experience, support services and a one-on-one student/mentor relationship.

The *Pass Plan III* program targets the parents of Pass Plan III (Passport Awarded for Staying in School) students. This program is designed to generate parental support for student participation, instill college aspiration in students by whetting parents appetites for college education for themselves and orientating parents to goals, structure of Pass Plan III.

The *Urban Education Consortium* serves the Passaic County urban community. With member from PCCC, William Paterson College, the Passaic and Paterson Boards of Education, Paterson Interfaith Communities Organization (PICO), United Passaic Organization (UPO), and the corporate community, the Urban Consortium acts as a clearing house for information, serves as the body to analyze the needs of urban youth, focuses on enhancing the strengths of the public school system and generally works for the betterment of urban youth.

PROJECT SMILE, *Mercer County Community College*: Serves one hundred seventy-five 7th, 8th and 9th graders from Trenton public and parochial schools: Junior High Schools #1, #2, #3, #4, and #5, Our Lady of the Divine Shepherd and Blessed Sacrament. Students attend classes on Saturday during the Fall and Spring, and for five weeks during the summer. *Project SMILE* is divided into three components: (1) counseling, (2) tutorial and (3) instruction (mathematics, science, reading, writing and computers).

PRE-COLLEGE SCIENCE ENRICHMENT PROGRAM (PRE-CEP), *Upsala College*: Serves thirty rising 9th grade minority students with interest and aptitude in science and mathematics from the inner city areas, particularly Newark. During the Summer and the school year, the program provides enrichment and/or developmental educational experiences in mathematics, computer science, and communication skills.

TRENTON PRE-COLLEGE ACADEMIC PROGRAM, *Trenton State College*: Serves one hundred eighteen Black and Hispanic students from Trenton junior/senior high schools. The major components of the program are a five week summer residential program, a twelve week program on Saturdays, and a three day outdoor self-actualization and motivation program for seniors. The Program uses college faculty to teach college preparatory instruction in computer science, English, mathematics, science, and technology.

PROJECT ELITE, *Fairleigh Dickinson University*: Serves forty 8th graders who attend Vernon-Davey Junior High School in East Orange. The major components of this project are a twelve week academic program designed to increase students basic skills and a twelve week cultural/motivational program. Support services include tutorial, personal and career counseling. Classes are taught by both university and high school faculty. An intense five week summer program will include basic skills courses and learning strategies courses taught by university faculty. Students will have the opportunity to work with university faculty in lab settings and visit companies in the career areas explored. The first four days of the summer program will be held off campus. The purpose of this experience is to address noncognitive variables such as motivation, self-esteem, communication and problem solving.

DOUGLASS SCIENCE INSTITUTE FOR HIGH SCHOOL WOMEN, *Douglass College, Rutgers University*: Serves forty-six rising 11th grade female students from throughout New Jersey who have shown talent in math and science. The program aims to have minority students comprise 50% of the participants. It includes a two week summer residential institute at Douglass and two academic year "follow-up" days. The Institute will include hands-on laboratory exercises, seminars, field trips, laboratory tours, career counseling, and discussions on issues of women in science, utilizing both college and high school faculty. Academic year programs with parents and teachers will describe strategies to encourage women in math and science.

PRE-COLLEGIATE HIGH TECHNOLOGY GRANT, *Seton Hall University*: Serves twenty rising minority 10th graders, twenty 11th graders and twenty 12th graders from Newark schools: Arts, Weequahic, Barringer and Science High Schools. Fifty percent of the population will be selected from Barringer High School. All participants will be enrolled in a six week commuter summer component of Seton Hall University Upward Bound Project. The general curriculum will reflect instruction in college preparatory subjects inclusive of mathematics, language arts, science, foreign language, U.S. History and computer literacy. In addition, each enrollee will participate in a university level course.

PRE-COLLEGE ACADEMIC PROGRAM, *Saint Peter's College*: Serves ninety 9th through 12th graders from Lincoln High School in Jersey City and twenty-five 8th graders from Lincoln High School's feeder schools. Major components of the program are a six week summer program, a twenty week academic year program on Saturdays, and a one week outdoor survival program. Support services include individual and group counseling, tutorial, career orientation workshops, and activities to improve oral expression and study skills. The Program uses both college and school faculty to teach Biology, Computer Science, Contemporary Social Issues, Black and Hispanic Studies, and Oral Expression.

PRIME- CAMDEN, *Camden County College*: Serves fifty students from Camden's 10th, 11th and 12th grades. The *PRIME* program will continue the selection process for the students which is done by the district teachers and the PRIME coordinators. There will be two groups of targeted students. The first group is comprised of twenty-five post-9th grade minority students who were in the *PRIME* program at other schools during the 1987-88 academic year. These students must be enrolled in mathematics and science courses and have a B average in these courses. The second group of twenty-five students will have class ranks in the 50-75th percentile but show academic talent. They will be involved in a career awareness program emphasizing technology.

COLLEGE BOUND, *Jersey City State College*: Serves two groups of 7th graders. Each group contains fifty students of either Black or Hispanic origin. The program has a ten week academic program on Saturdays during the regular school year, and a six week residential summer program. In the future, the Saturday program will be expanded to a twenty week session. The program includes instruction in reading, writing, mathematics, literature and the arts, and where appropriate, ESL. Interpersonal skills, personal growth, and an awareness of ethnic and cultural diversities and strengths are emphasized. In addition, career awareness and goal setting will be developed and where appropriate, students will be given the opportunity of part-time employment through the Cooperative Education Program.

CONSORTIUM FOR PRE-COLLEGE EDUCATION IN NEWARK, *Essex County College. Newark Board of Education. New Jersey Institute of Technology. Rutgers University - Newark. University of Medicine and Dentistry*: Serves nine hundred Newark students in grades 7 through 11. The Consortium offers a six week comprehensive summer academic program for grades 9 through 11, and a thirty week after school and Saturdays academic year program for all grades. The program focuses on math and science skill development, counseling, leadership development, achievement and career exploration. Each campus highlights different disciplines in its programs. Rutgers - Newark offers liberal arts and pre-professional law; NJIT offers engineering and technology; Essex County College offers computer and laboratory sciences; and the University of Medicine and Dentistry offers allied health careers and pre-professional medicine. In addition, each of the programs provides instruction in reading, writing, math and oral expression. There are two major support groups for students which complement the instructional programs and activities - the Parent Support Group and the Principal's Advisory Board. The Principal's Advisory Board consists of principals from the Newark schools who assist in the development and implementation of consortium activities.